Forestry

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June, 1931

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No. 6
VOL. XXVI

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D. M. Campbell, Editor **A. T. Kinsley, Associate Editor**

A test at the Indiana Experiment Station showed conclusively that it is neither economical nor desirable to grind shredded corn stover for dairy cows. They do better on unground stover.

Eddy, of Columbia University, states that colds and other infections can be guarded against by the inclusion of sufficient vitamin A in the diet and that insufficient amounts of this vitamin in the diet promotes throat infections, stomach troubles, lung and kidney disorders and some kinds of deafness.

A successful trap has been devised for the Tsetse fly, which transmits sleeping sickness to man and nagana (*Trypanosoma Brucei*) to domestic animals. This fly is the chief barrier to the settlement of wide areas of the veldt in Africa. It is man's worst enemy over hundreds of thousands of acres in the dark continent.

Hueper of the Cancer Research Laboratory of the University of Pennsylvania, has prepared a rabbit serum which appears to be a successful treatment for leukemia in man. Leukemia is essentially a riotous growth of the white blood cells and is closely related to some forms of cancer. The disease, although rare, is nearly always fatal. The hope is entertained that some modifications of the anti-leukemia serum may render it likewise a successful treatment for certain forms of cancer.

Records indicate that goitre in lambs can be prevented in goitrous regions by giving the ewe a dose of one-twentieth of a grain of potassium iodide daily during the gestation period.

Milk has in the soybean a rival for first place as the most nearly perfect food for man. Nearly half the world's population uses soybeans daily as a protein food replacing milk. The protein constituents of soybean are extremely well balanced, containing some necessary amino acids that milk and meat do not provide. Forty per cent of the soybean is protein and 20 per cent is oil. It contains all the vitamins and counteracts acids within the body, according to *Science*.

With the great frequency of injuries to dogs and other small animals as a result of being struck by rapidly moving automobiles, internal hemorrhage has assumed far greater importance to small animal practitioners than formerly, and an innovation in its treatment reported by Drs. Brown and Debenham of the University of California should prove of interest and perhaps value in some cases.

"We no longer consider it true surgery to withdraw good blood and throw it away," these doctors say. Transfusion is performed on these cases, using the patient's own blood by withdrawing it from the body cavities and injecting it into a vein. Except that no donor is used, the transfusion is performed in the ordinary manner.

Cooperation Among Practitioners

By M. C. HALL, Washington, D. C.
President, The American Veterinary Medical Association

THE practicing veterinarian is compelled by circumstances to be a business man as well as a professional man, a thing which is sometimes, but not always, contrary to his inclinations. In other words, he must assess the value of his services to his client, present bills, collect bills, pay expenses, and do other things which of themselves are business matters and not professional matters. His success may be more a matter of business ability than of professional ability, and his failure is often more a business failure than a professional failure. Professional ability and business ability are not incompatible, but neither are they habitually associated characters, and they cannot be depended on to act synergistically.

Business ability itself is not the simple concept that the words might imply. It is a complicated idea surrounded by complications of motivation and method. One man's business ability originates in an economic concept of a fair living and a fair return on his investment; another man's business ability originates in a desire to get rich as fast as possible. With two such divergent ideas behind their business practices, representatives of these two groups may do the same things in the way of charging and collecting, but the differences in their objectives, methods and results will be evident enough to discerning persons.

Conceding that this matter of business ability is not entirely a simple matter, there are certain economic considerations involved that are susceptible of fair and dispassionate treatment. In a society which, considered from all angles, has rather little social organization and lacks generally accepted standards, the only pragmatical test of a practitioner's ability is his success in terms of building and maintaining a practice, and we must assume that his success is more or less correlated with both his professional and business ability. Since society is still highly individualistic, and since there is no actual assumption that a man's income is proportionate to his value to society, we must assume that society concurs in a man's making as much as he can make without violating the law. This is not a profoundly philosophic attitude, but society is not profoundly philosophic.

Under such a social set-up, the veterinarian is compelled to practice his profession from a business standpoint on the basis of the prevailing business methods. Now the prevailing business methods leave much to be desired. It is evidence enough on this point that we are still in the depths of a serious business depression with 6,000,000 persons out of work, with an appallingly long list of bank failures, and with bread lines conspicuously prevalent over the country. But even in times of prosperity business is none too businesslike. It is not an uncommon practice for four sets of milk wagons to start from four points around a city and for four different milk wagons to deliver milk in the same block and have this happen in many blocks. If the federal government collected mail in any such fashion it would be held up as a glaring example of the business inefficiency of the government, but so far as milk is concerned society accepts the preposterous duplication of expense in delivery as inevitable and makes no demand that dairies provide for economical distribution of milk and save money to the dairy and the consumer.

Many of the economies which have been effected in business have been brought about under legislative compulsion, or the elimination of competition in costs and the necessity for competition in

improvements and savings, or in some stark necessity for cutting costs or saving waste, and too few economies seem to originate in a foresighted and intelligent consideration of the possibilities of cutting costs, eliminating waste and improving efficiency. Business men are prone to take existing situations for granted and to charge a profit computed on costs which involve waste and inefficiency, and the public pays the costs of a great deal of stupidity.

As a business man the veterinarian in practice should take into consideration the possibility of increasing his income without necessarily increasing either his practice or his charges. He can do this at this time without waiting for the pressure of events to compel his consideration of this possibility. Like the milkman, veterinarians drive five miles out to make a call and are followed along the same route and onwards by veterinarians who go ten miles to make a call, and all of this mileage costs the veterinarian and his client money. If there are four veterinarians in a city, then there are four sets of various kinds of apparatus, four offices, and four of everything necessary for the routine practice of veterinary medicine. If there is no escaping this situation the profession and the public must put up with it. If a man must play a lone hand and cannot or will not cooperate with others in practice there is nothing to be done about it. But the veterinarians who would like to increase their income by decreasing their expense could profitably consider other possibilities.

In human medicine there has been a marked growth in the organization of groups and clinics with a central office and one set of clerks to attend to the common business of the group. There has also been some growth in the number of partnership arrangements. Both of these arrangements effect economies, and they also increase efficiency. A greater degree of specialization becomes a possibility, and each physician has the benefit of consultants available for discussing his cases. Moreover, these arrangements improve personal relationships and promote professional association.

There is as much need for this sort of thing in veterinary medicine as there is in human medicine, except that the veterinary profession is not at present overcrowded and the economic pressure of competition is not yet compelling the veterinarian to think of ways and means for relieving a bad situation. Why not anticipate that the pressure will come in time and take steps to obtain now by voluntary action the benefits that might be forced on the profession later? The veterinarian has such a wide range of patients that he needs the chance to specialize on groups of patients. The present time finds many older men who have wide clinical experience but little laboratory training, and many young men who have good laboratory training and little clinical experience. Where there is goodwill and a cooperative spirit, why shouldn't the numerous "competitors" get together as a group of colleagues, sharing common office room, using the same clerical force and the same apparatus and instruments, making one trip in one direction answer all calls from that direction, and pooling their total knowledge and abilities for the common good?

When the writer discussed this matter at the Veterinary Conference at Columbus, Ohio, in connection with a program of action for the American Veterinary Medical Association, Dr. D. M. Campbell stated to the Conference that statistics obtained by the American Medical Association showed that physicians in partnerships and other groups had a decidedly higher average income than those practicing entirely as individuals. This offers the evidence of fact to support the theoretical argument given here. The practitioner should consider this matter now, and see if it is not possible to reap an immediate benefit rather than wait to have a later benefit thrust on him.

Technical Supervision in the Production of Highest Quality Milk*

By JOHN G. HARDENBERGH, Plainsboro, N. J.

The subject of supervision of milk supplies needs no lengthy introduction to emphasize the place which milk holds in the modern scheme of nutrition. Beginning with infancy and extending through the important stages of body growth to maturity, milk and its products have become established in the human dietary to an extent estimated to constitute one-fourth of the total expenditure for food of the average American family. Even this figure is below that recommended as ideal by physiologists, nutrition specialists and economists.

Accepting as a fact that milk is essential to the public health and welfare, it follows that an important place must be given to the supervision of milk production and distribution. In looking back, we find that three principal influences in the evolution of modern milk supplies had their inception some thirty years ago. These were: the work of Pasteur; the introduction of the tuberculin test of dairy cattle; and the pure milk movement initiated somewhat on a philanthropic basis by those who visualized and created what was known as "certified milk."

These three factors have exerted tremendous influence over a period of, roughly, thirty years and, to considerable extent, have reached the peaks of their development in that time. That the persons back of these discoveries and ideals realized the possibilities and future bearing of their efforts seems unlikely, yet concrete evidence of their effect upon the dairy industry is today abundantly available. In this country's more congested centers of population, pasteurization has become the generally accepted method of insuring the safety of fluid milk supplies that cannot be adequately protected by other means. The tuberculin test of dairy cattle has become a requirement in progressive communities whether or not pasteurization is practiced. The pure milk movement, conceived as a specialty, has acted to raise the level of production methods and to serve as the ultimate standard for them.

Today the greatest concentration of effort is directed to the effective supervision of milk supplies with two objects in view: first, the safeguarding of the supplies as a public health measure; second, the improvement of the supplies with respect to quality of product. These efforts are being exerted not only through official channels of law enforcement but also through private or industrial channels that are primarily concerned with the milk industry as a unit in our economic system. In the first instance, protection of milk supplies comes about through official and legal means; in the second, improvement in quality receives its most effective stimulus by economic forces (such as bonuses and grading systems) operating through dealers and distributors.

The problem of effective supervision of our market milk supplies has become one of great magnitude, especially with respect to supervision of production. Whereas the processing and distribution of fluid milk has become rather generally consolidated into comparatively large units susceptible to and capable of competent control, the production end is still centered in the small farm where milk may be more or less a by-product. The very multiplicity of these units makes them difficult of control either from the standpoint of their possible relation to public health or of the quality of milk produced.

We may visualize the task which confronts the milk inspection service of a large city health department or the inspection service maintained by a distributing organization. These services have in many instances made commendable progress in improvement of milk supplies both with

* Abstracted from a paper read before Section on Medicine of the American Association for the Advancement of Science, Des Moines, Ia., December, 1929. Reprinted from the *American Journal of Public Health*, July, 1930.

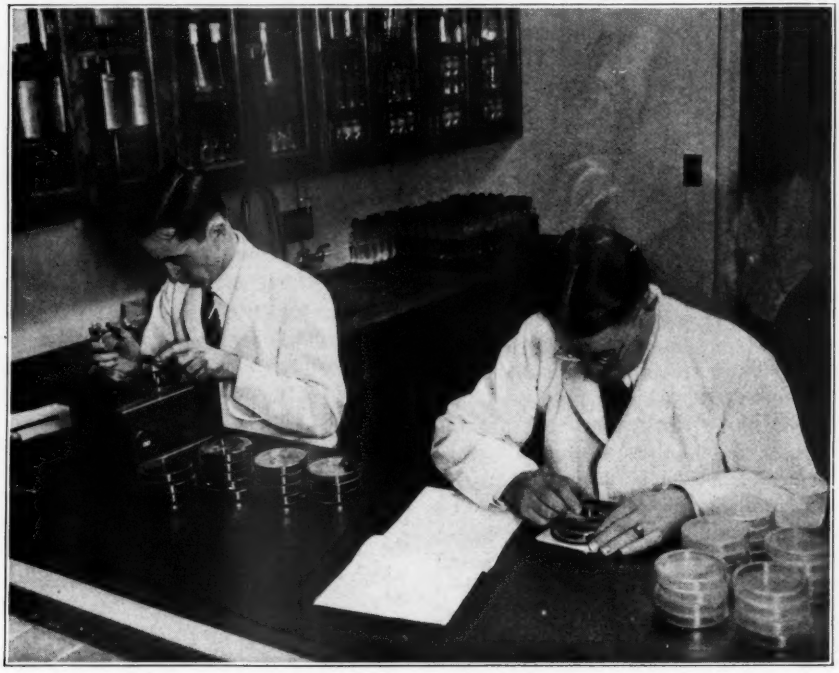
respect to disease control and quality control. Yet their task is laborious and never-ending. Chicago may be cited as an example. The Chicago milk shed comprises some 35,000 farms and about 400,000 cows —an average of about 11 cows per dairy herd. This figure is somewhat above the average for other large cities east of the Mississippi River. Detroit has some 16,000 farms supplying milk with an average of about 6 cows per herd. New York, Philadelphia, and Boston have sources of milk supply which average 7 to 8 cows per herd.

Think what these figures mean, in terms of an inspection service, either official or private, that can effectively control methods of production and the health of the dairy animals from one year's end to another; or, in terms of innumerable human contacts with the milk produced and the attendant opportunities for direct or indirect infection of it.

With respect to its public health significance and the channels through which milk may become infected, two principal phases will be considered: bovine diseases directly transmissible to man through milk; and human diseases directly or indirectly transmissible thereby.

Bovine Diseases

Tuberculosis—Tuberculosis infection of man with the bovine virus has been the subject of exhaustive studies for many years and is now quite generally understood. In a relatively small proportion of cases, milk becomes infected with bovine tubercle bacilli due to udder tuberculosis. More frequently, however, the method of milk infection is by passage of the bacilli through the intestinal tract, the organisms being excreted in the feces of some tuberculosis dairy cows. Under ordinary dairy conditions it is very easy for more or less manure from such cows to be introduced into the milk during milking,



The final step in an examination which makes it possible to control the quality of the milk of each individual cow admitted to the herd. This examination controls the quality of the Walker-Gordon bottled product.

thus infecting it with the bovine organism.

Protection against human tuberculosis of bovine origin has come about in this country through the operation of two factors: the tuberculin test of dairy cattle, and the pasteurization of the ordinary market milk supplies in the centers of population. If the bovine type of infection in man continues to occur in the United States, it is likely to be a rural problem largely, associated with rare instances in which families or small communities use milk from untested herds and where pasteurization is not economically feasible and probably will not be practiced for many years. Enthusiasts may say that even this problem will be solved by pasteurization in the home but they fail to take into account the element of human nature in following lines of least resistance and the preference in many places for raw milk.

The basic solution for the prevention of bovine tuberculous infection in man naturally rests in the eradication of the bovine disease. This is coming about very rapidly through the operation of the national cooperative program engaged in by the state and federal governments since 1917.

Pasteurization has played a big part in decreasing the incidence of bovine tubercle infection in man, but in a fundamental sense it has served only as a substitute for better means. The health authorities of Chicago recognized this when they made the requirement for tuberculin tested herds, even though the milk from them was to be pasteurized. The idea is becoming increasingly repugnant to all that any process can replace standards of health for dairy herds and dairy employes and standards of sanitation for dairy methods.

To those who are inclined to question the efficiency of the tuberculin test of dairy cattle it may be said that progressive dairymen are not concerned so much about the relatively small number of so-called no-lesion reactors removed from their herds as they are about the possibility of the occasional cow that may be actually infected and yet failed to react. On this point, a few data may be of interest.

In a large dairy herd which has been under federal and state supervision for a number of years, a considerable number of cattle are sold out of the herd each year to slaughter where they are subjected to post-mortem examinations under official inspection, particular attention being given to possible lesions of tuberculosis. Records are available covering the autopsy findings on 2,117 cows (negative to the tuberculin test) sold out of the herd during the past three years. Of these 2,117 cows, only 8, or 0.37 per cent, showed lesions that may have been tuberculosis. Of these 8 cases, 2 animals showed calcification of the posterior mediastinal lymph nodes only; 2, hemorrhagic lesions only of the same nodes; 1, a small calcified lesion in the head; 1, calcified lesions on the exterior of the uterus; 1, a calcified lesion in a hepatic lymph node; and 1, skin lesions which proved to harbor acidfast organisms resembling *Mycobacterium tuberculosis.*

It is interesting to note that not a single case was found in which the presence of a supposedly tuberculous lesion was of such a nature as to be significant either with respect to infection of the milk or to spread of the disease to other animals. The incidence of possible tuberculous lesions (0.37 per cent or 1 in 262) in cows negative to the tuberculin test indicates an efficiency which compares very satisfactorily with any other diagnostic test we know.

Brucella abortus infection.—The part that milk plays in the etiology of Brucella infections in man is extremely difficult to appraise at the present time. The state of our knowledge is nothing less than chaotic. Scarcely any two investigators may be found whose ideas are in accord as to the types of organisms isolated from human cases seemingly infected through milk, or who agree as to the exact methods for identification and differentiation of the various strains isolated. It has been very easy to ascribe cases of undulant fever to raw milk and it must be accepted that in some instances the infection has been so acquired. On the other hand, deliberate attempts to produce human infection through the inges-

tion of milk heavily inoculated with *Brucella abortus* have failed conspicuously.

Epidemiological studies have shown that, in a majority of cases, history of consuming raw milk may be obtained but, in the same cases, at least 50 per cent had other contacts with Brucella infection. In certain sections of the country, Brucellosis in man is obviously milk-borne while in others it is just as obviously an occupational disease. It is a significant fact that those scientists who for many years have studied Bang abortion disease in cattle and related types of infection are the least willing to proffer set opinions and ready solutions for the problem. Therefore, it behooves those of us with lesser experience to be cautious and to await the results of more mature observations before attempting to prove the actual role played by milk.

However, so long as there remains a reasonable doubt and so long as milk is reputed to be a danger as a carrier of Brucella infections, the supervision of milk supplies must provide for adequate safeguards. This may be accomplished either by pasteurization or by elimination of Brucella infections in dairy herds. It must be borne in mind that neither of these systems will affect the complete control of human undulant fever, perhaps not even the major portion of such cases.

With respect to the elimination of Bang abortion disease from dairy herds, it has been demonstrated that the agglutination test is reliable for the detection of *Brucella abortus* infection. The removal of reacting animals will serve to remove those that are shedding the organism in the milk. Exceptions to this are so rare as to have no practical significance. In discussing the efficiency of the agglutination test, a statement has been repeated in medical literature to the effect that many cows eliminate *Brucella abortus* in milk and still fail to react to serum tests. This is a damaging criticism which is not supported by the facts, it being in the nature of a biologic impossibility to have localized infection in the udder without eventual transfer of agglutinins to the blood stream.

Human Diseases Transmissible Through Milk

In discussing the human disease it is desired to consider two types of infection: the first, in which the infection of the milk may be direct, as in typhoid fever; the second, in which the infection may be indirect (from man to the udder), as in septic sort throat and scarlet fever.

Typhoid Fever.—In the case of typhoid fever, the human carrier is the element which must be eliminated. This is recognized in all well organized supervisory systems that control milk supplies, whether raw or pasteurized. It is essential that all milkers and milk handleds should be examined by suitable tests and every effort made to exclude the possible carrier. Milk has little if any bactericidal action against typhoid bacilli and not even pasteurization can be depended upon as an absolute safety factor if the carrier has access to the milk following the heat treatment. This was illustrated in San Francisco where the work of efficient pasteurization was nullified by a typhoid carrier who operated the bottling and capping machine.

Streptococcic Infections. — Septic sore throat and scarlet fever are of special interest in milk control work because they present two possibilities in relation to milk infection: the infection may be direct as from a milker or other dairy employe, or it may be indirect as through the infection of a cow's udder by a human carrier. In the case of direct infection, it is not reasonable to suppose that any extensive epidemic could occur, inasmuch as it would be difficult for a human carrier to infect milk so grossly that any considerable portion of it would carry infective dosages. This is particularly true of large supplies wherein the ultimate dilution of any given direct contamination might easily make subsequent human infection an extreme remote possibility.

Furthermore, Jones, [1, 2] has shown in his

[1] Jones, F. S. Udder Infection with Streptococci of the Scarlet Fever Type. III—The influence of milk on the growth of scarlet fever streptococci. *J. Exper. Med.*, XLIII, 6: 965-975 (June 1), 1928.

[2] Jones, F. S. Bactericidal Property of Milk. *Certified Milk*, IV, 44: 4-9 (Dec.), 1929.

studies of the influence of milk on the growth of scarlet fever streptococci, and in his studies of the bactericidal properties of milk, that certain streptococci of human origin are very susceptible to the effects of milk and that they fail to multiply in fresh unheated milk or in milk heated as high as 62° C. (143.6° F.) for 20 minutes. The significance of these observations lies in the reasonable supposition that no extensive epidemic of scarlet fever or septic sore throat can occur through the medium of direct human infection of a milk supply.

However, extensive infection of milk supplies with human types of streptococci can occur through the medium of the udder of the cow as a secondary host. This has been the case in several milk-borne epidemics of septic sore throat in which *S. epidemicus* has been inoculated, as it were, into one or more quarters of an udder by an infected milker; the same occurrence has been noted at least once in the case of *S. scarlatinae*. The subsequent multiplication of these streptococci in the medium furnished by the milk and udder tissues may result in millions of these pathogens being discharged into the milk produced by the infected cow and so into the herd product, since there may be no immediate indication of resulting mastitis to warn the dairyman.

As a rule in epidemics in which pathogenic streptococci of the human type have been traced to infected milk, we see the combination of a relatively small herd, perhaps only a few cows, the milk from which is sold raw; the presence of a cow with an infected udder; and methods of milk production which pay too little attention to minor udder disturbances and very little attention to the health of dairy employes. Under such conditions, it is possible for a milk supply to carry infective dosages of pathogenic organisms.

In large herds where the milk of any one cow may be mixed with the milk of, say, 100 other cows, the dilution factor may operate to reduce the chances of infective doses of pathogens. We know that such must be the case because cows harboring *S. epidemicus* have been found at a time when there was no occurrence of septic sore throat among the consumers of the milk.

The significance of hemolytic streptococci in milk may be said to depend almost entirely upon whether the species present are of bovine origin, incapable of producing diseases in man, or whether they are of human origin, having gained entrance to the milk directly from a human carrier or indirectly through the medium of a cow whose udder has been infected by a human carrier.

So far as beta hemolytic streptococci of bovine origin are concerned, it has been shown that they are commonly found in mixed herd milks, both raw and pasteurized. Several species have been identified, the most frequently occurring being *S. mastitidis,* so named for its association with mastitis in cows. It may also be found living in the udders of cattle with no symptoms of udder inflammation. Its presence is not objectionable except as a possible indication of mastitis and it probably has no true significance as to human health.

Our knowledge of the characteristics of pathogenic types of hemolytic streptococci has been put to the most practical use in the modern laboratory methods for control of certified milk production. Today it is a routine procedure on a few certified milk farms to examine on blood agar the milk from every fresh and new cow prior to admission to the milking line. In addition, the entire producing herds are checked at frequent intervals by means of group samples which are also plated in blood agar. The occurrence of any suspicious types of streptococci in such a group sample is followed up by a re-check of the individual cows contributing to the group in order to locate the animal responsible. These laboratory control methods have been described in detail elsewhere.[3, 4]

In this discussion of milk and its relation to the transmission of disease either of human or bovine origin, I have dealt only with some phases of the problem to which special

[3] Hardenbergh, J. G. Laboratory Control of Certified Milk on the Farm. *J. Med. Soc. New Jersey.* XXVII, 1: 12-16 (Jan.), 1930.

[4] Hardenbergh, J. G. Identification and Significance of Hemolytic Streptococci in Milk. *New England J. Med.,* 202: 373-376 (Feb. 20), 1930.

significance is attached by sanitarians. The necessity for intelligent and effective supervision of milk supplies is evident. The supervision must primarily insure adequate protection for the public health and secondarily improve the quality of milk at the source.

Pasteurization has served an indispensable purpose in contributing a relatively high degree of safety to the milk supplies of the more thickly populated sections of the country. Properly applied, the process has a place and a value in the prevention of milk-borne disease that every progressive individual must recognize. With present standards for health and in the present state of development of our milk-production industry, the increasing demand for pasteurization is justified.

We must recognize, however, that neither the heat treatment of milk nor any other processing method removes the causes and defects which make pasteurization necessary. Neither does any heat processing treatment add to the intrinsic value of milk as a food product. These considerations are fundamental problems which leaders in the dairy industry are determined to solve in order that the milk production phase of the industry may keep pace with other developments. The ideal that is being sought is that of a fundamentally sound milk embodying the highest possible attainments in safety, cleanliness and nutritional values at the source. Given such a product it may then be consumed raw or may be subjected to additional processing of proved benefit.

A FARM RELIEF PLAN THAT WILL WORK

Reports made by 608 Illinois farmers, raising an average of 88 spring pigs each, under the McLean County System of swine sanitation, indicates a saving of $2.50 per hog or $133,780 as a result of the sanitation plan. It is estimated by the Extension Department of the University that if all of the four million pigs reared annually in Illinois were raised under the McLean County System, it would net a saving to the farmers of the state of $10,000,000 a year.

THE SURGICAL REMOVAL OF A FIBROMA

In August of last year I was called to see a horse that had a pedunculated fibroma on the anterior part of the hock, somewhat larger than a man's fist. It was of about a year's standing and had started from a severe barbed wire cut. It was exuding a sticky substance, with a fetid odor, and had a neck of attachment about the size of an old time silver dollar, (the phrase "old time" is used here because it has been so long since the writer saw one).

The animal was cast with hopples. The neck of the tumor was cut through with a sharp scalpel and the mass removed. There were several arteries in the center of the cut portion that spouted blood profusely. This was taken care of by firing with the ball end of an ordinary "ball pein" blacksmith's hammer, which had previously been heated in a nearby blacksmith's shop. A big iron barge spike was used in the hammer instead of the ordinary wooden handle. And if you never used one, just try it, it makes an almost ideal firing iron for this kind of work.

This tumor was of a smooth solid white consistency all the way through. It did not have any pyogenic nuclei in the center, and did not contain a gritty substance such as I have previously found in similar cases.

Some authorities say that these neoplasms are due to metabolic changes in the tissue cells during the process of repair, but the reader can have his own opinion as to the cause. I want to advance the theory that in this case at least, a contributing cause was a big vicious strand of barbed wire.

The entire process of removing this fibroma took considerably less time than it has taken to tell about it. As I have not seen nor heard of the case since the operation, I cannot say what if any untoward sequelae developed.

Rembrandt Morgan.

Winfield, W. Va.

Ventral Hernia in a Bovine

By DALE SUPLEE, Manhattan, Kan.
K. S. C., '31

VENTRAL hernias are most likely to be due to accidents, extreme physical exertion or in cases of advanced pregnancy where the gravid uterus causes pressure necrosis on the floor of the abdominal cavity. Furthermore, as ventral hernias are usually the result of traumatisms, there is more or less inflammation and therefore adhesions between the hernial sac and its contents are far more common than in the case of a hernia through a natural opening. The peritoneal sac has usually ruptured so the preparation of the operative area must be very thorough and complete. In fact it must be absolutely aseptic in the animals that are extraordinarily susceptible to peritonitis.

A very good plan to observe in the diagnosing of a ventral hernia is to take plenty of time and study the condition thoroughly. One may be tempted to do an exploratory puncture which in most cases is the proper thing to do, providing a small-caliber cannula and trocar are used, and aseptic technic were carried out. But one should never under any condition take a knife and rip open such a sac. The consequences of so doing, if it were a hernia, can be seen.

The illustration shows a case of ventral hernia in a yearling calf which came to the veterinary clinic of the Kansas State College March 13, 1931. The only history obtained was that the owner had noticed the condition two months previously, and the hernia had increased in size gradually until it attained the diameter of about twenty inches and about ten inches through its thickest part.

The case was diagnosed as an irreducible ventral hernia located on the lower right side of the abdominal cavity, just posterior to the diaphragm. The hernial ring was found to be in the eleventh intercostal space, or between the eleventh and twelfth ribs and due to a rupture of the intercostal muscles. It was approximately four inches in length and the width of the intercostal space.

The prognosis in a case of this type is always grave, though not so much so in cattle as in horses or cats, due to their extreme susceptibility to peritonitis. The prognosis from the standpoint of recovery of the hernia depends upon the size of the hernial ring. The larger the ring the less favorable the prognosis, because it is almost impossible in the case of a very large rupture to insert sutures strong enough to hold the edges of the ring together. And in this particular case it was found that the ribs formed two of the hernia's boundaries, which of course made it impossible to suture the ring together.

Preparation of the animal for the operation consisted in dieting the animal for a few days previous to the operation on a laxative diet and semi-solid foods. Twenty-four hours before the operation, all solid foods were withheld. The object of the reduced ration was to empty the intestines and thus diminish the hernial contents. It is to be recommended that the stomach contain some nourishing food at the time of the operation, because lowered nutrition may reduce the chances of complete success and recovery of the patient.

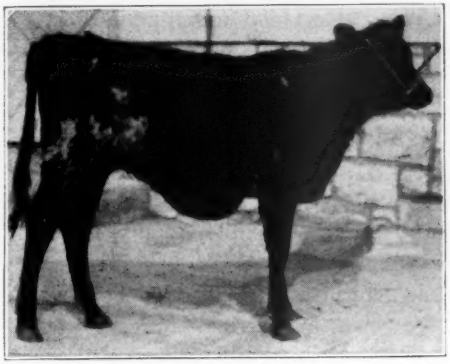
Just before the operation was begun the calf was given 18cc of a 2% solution of procaine epidurally. The animal was then confined on an operating table in lateral recumbency. After this the hair on the sac and a liberal area surrounding it was clipped and shaved. The area was painted with tincture of iodin. The instruments and silk suture material to be used were sterilized by boiling for ten minutes in a sterilizer. The operator's hands were thoroughly cleansed and disinfected.

A longitudinal incision about 8 inches in length and carried through the skin was made directly over the hernial ring. This provided enough room to allow the operator to introduce his hands and by blunt dissection break down the adhesions. It was found in this case that most of the adhesions

occurred between the hernial contents and the tissues covering the ribs, the operator also found at this time that the peritoneum had ruptured, which almost always occurs in such cases.

This procedure of breaking down large adhesions and gradually producing complete reposition took a great deal of perseverance and patience.

After the adhesions had been entirely broken down, the intestines were pushed back into the abdominal cavity and the hernial ring was closed. This was accomplished by taking silver wire No. 20 and looping around the eleventh and twelfth ribs the entire length of the ring with about an inch space between each loop. After the silver wire had been fixed in position, braided silk suture No. 16 was woven in and out of the loops from top to bottom which gave the appearance of a mat when completed. The silk sutures were placed close enough together to avoid any possibility of the intestine working out and causing strangulation. Braided silk suture material was used here because it is much stronger and more secure than catgut. However this material must be absolutely aseptic to become encysted without suppuration. Over the top of this mat, the cutaneous trunk muscle was sutured to the underlying tissues by interrupted sutures. The excess skin was removed and the skin was sutured together with a continuous suture of No. 16 braided silk. A large opening was left at the bottom to allow sufficient drainage and also any flushing that might be necessitated. Hemorrhages that occurred during the operation were checked by the use of haemostats.



Ventral hernia in a yearling calf.

Aftercare consisted in moving the calf on a cart to a clean box stall, bedded well with clean straw. This procedure was carried out in order that the calf would avoid fighting and straining to gain its feet and result in tearing out the sutures, until after the effects of the anesthesia had worn off and it had gained normal use of the hind legs.

The animal was taken home in four days' time, and the owner was advised as to keeping the animal in a clean stall by itself with plenty of good nourishing food and water. He also was advised to remove the skin sutures at the end of ten days.

A report two weeks later from the owner stated that the calf was doing nicely and had made an uneventful recovery.

WANTS RECIPROCITY IN LICENSES

The writer believes that when a man has a diploma from a recognized veterinary college, and has passed the state board of veterinary examiners for a license to practice in any state, that this should be his "open sesame" to all other states. And, if a practitioner wants to move from one state to another, it should be necessary only to establish the fact that he has satisfactorily passed the state board in the state from which he is moving, to get a license in his new location.

This would save a lot of time and trouble for veterinarians who are not as yet located for life, more especially young fellows who have not been out of college very long.

I would be glad to know the opinion of other practitioners on this subject. The writer has no personal interest in this matter, as evidence of which he will say that he has never moved and had no intention of moving.

Rembrandt Morgan.

Winfield, W. Va.

Pullorin Test the Practitioner's Test

By W. O. KESTER, Manhattan, Kansas
K. S. C., '31

The pullorin (wattle) or intradermal test for the purpose of detecting carriers of pullorum disease in poultry flocks maintained for breeding purposes is the most practical and probably the most efficient test that can be executed in the field by the veterinarian.

The recent necessity of testing 10,000 birds on short notice under field conditions, has prompted me to present this article in the hope that the veterinarian in the field will see the desirability of using the pullorin test and take advantage of the opportunities offered by it.

Present Situation of Pullorum Testing Unsatisfactory

The manner in which poultry practice has evaded the veterinary practitioner's hands is inexcusable and represents an unnecessary loss of profitable business. The veterinarian's own negligence is much to blame for this state of affairs. Too few take advantage of the opportunities offered in poultry work.

All intelligent hatcherymen know that to avoid failure, an effective plan for controlling pullorum disease must be devised. Very few realize, or are willing to accept, the fact that the veterinarian is the only person scientifically qualified to execute such a plan successfully. The public must be educated to the fact. When the veterinarian and the hatcheryman combine forces, a great stride will have been made toward the eradication of pullorum disease.

Pullorin Test Best Adapted for Field Work

The pullorin test is by far the best suited to field conditions, especially where we are dealing with small and scattered flocks. There is no breakage of equipment, no burdensome materials to carry around, and no laboratory to maintain. The weather affects it in no manner whatsoever, except in cases where frozen wattles are encountered. One may work under field conditions and not have to worry about contamination, spoiling, freezing, and spilling of blood samples, or about assistants making mistakes.

The whole blood agglutination test is, as yet, not an accurate or satisfactory test, and if it were, it could not, from a practical standpoint, compete with the pullorin test. It is granted that the blood serum agglutination test under ideal laboratory conditions is apparently more nearly accurate than the pullorin test, but under conditions as they exist in the field, it is another story.

Economical and Understood by Owner

A small intradermal syringe, needle, pullorin, and an antiseptic to wash syringe and hands as we move from flock to flock, is all the equipment required. The trouble and cost of leg banding and keeping records is unnecessary. Time and help, which are the biggest factors in the cost of running any test, are of least importance here. A competent veterinarian with two capable persons catching and holding the birds can inject an average of three to five hundred an hour and can read the reactions in less time. Compare this with the long drawn out process of collecting and caring for blood samples and final laboratory report of the agglutination test. The owner is not always satisfied with laboratory findings because his birds appear healthy to him. In the pullorin test, he can see the reaction himself, is satisfied with results, and is willing to remove reactors.

Pullorin Test Less Injurious to Birds

This method is much less harmful to the birds. There is no necessity of abso-

lute restraint which would generally result in much excitement and disturbance in the flock. The irritating removal of feathers is avoided. There is no loss of blood or a wound with which to contend. The above factors may be of little importance ordinarily, but nevertheless, they are usually very noticeable and objectionable where chickens are bled and constitute a factor that the general practitioner has to overcome.

The effect on the flock owner cannot be overlooked. The poultry man always resents the disturbing of his flock, the pulling of feathers, and especially the sight of blood. In the pullorin test he may do all the handling himself and is satisfied with the treatment of his birds.

Comparative Efficiency of Tests

The chief, in fact, the only objection in the past to the pullorin test is its inefficiency in removing all reactors. Yet, if the veterinarian judiciously selects his pullorin and exercises the proper technique, as he may easily do, is the pullorin test as inaccurate in comparison with the agglutination test as we are led to believe?

Research workers have obtained varying results. It has been generally agreed for some time that the pullorin test is about 80 per cent efficient as compared to the agglutination test. The agglutination test obviously is not perfect. The only sound basis of comparison is the presence or absence of pullorum disease in the chicks. In this respect, Edgington and Broerman[1] report the agglutination test slightly more efficient in their experimental work.

The latest experiments with improved biologies may indicate that the pullorin test is considerably more efficient than is generally believed. Gwatkin[2] found a correlation of 92% between the agglutination and pullorin test. Bushnell and Brandly[3] found 86.5%. Michael and Beach[4] report 99%. Bushnell and Brandly[5] demonstrated post-mortem lesions of the disease in 87.7% of the birds reacting to the pullorin test. Ward and Gallagher[6] conclude that the two tests are equally efficient. Michael and Beach[7] state that there is little danger of a non-specific or false reaction in non-infected birds if the proper pullorin is used. Brandly's[8] results show that frequent repeated tests do not cause significant desensitization of reactive individuals.

We should note that the above results were obtained by men highly qualified to do such work and that the tests were made under ideal conditions. The pullorin test may be administered in the field by the veterinarian as efficiently as it was in these experiments by these research men, because every veterinarian is familiar with the technique of the tuberculin test and the two are practically identical. The delicacy of the technique and the numerous possibilities of error will prevent the agglutination test from ever being as efficiently handled under field conditions as it is under conditions provided in controlled experiments.

We will always encounter the breakage, spoilage, contamination and mislabelling of blood samples. Lost tags, legbands, misinterpretation of numbers, and mistakes in records are unavoidable. Where the responsibility is divided or is partly placed upon laymen, errors due to carelessness or ignorance will continue to occur.

Affords Opportunities for a Final Check

A very serious problem which is generally overlooked is the ignorance of the

[1] Edgington, B. H., and Broerman, Alvin. Ohio Agr. Exp. Sta. 48th Rpt. (1930).
[2] Gwatkin, R. Rpt. Ont. Vet. Coll., 1927, pp. 42-45.
[3] Bushnell, L. D., and Brandly, C. A. Journ. A. V. M. A., LXXVIII, N. S. 31, No. 1, January 1931, pp. 64-78.
[4] Michael, S. T., and Beach, J. R. Hilgardia, iv (1928). 8.
[5] Bushnell, L. D., and Brandly, C. A. Journ. A. V. M. A., LXXVIII, N. S. 31, No. 1, January 1931, pp. 64-78.
[6] Ward, A. R., and Gallagher, B. A. U. S. Dept. Agr. Bul. 517 (1917).
[7] Michael, S. T., and Beach, J. R. Hilgardia, November 1929.
[8] Bushnell, L. D., and Brandly, C. A. Journ. A. V. M. A., LXXVIII, N. S. 31, No. 1, January 1931, pp. 64-78.

flock owner concerning testing and the importance of an efficient test. All too many are more interested in displaying a certificate to their customers than they are in the eradication of pullorum disease. If the removal of reactors is left to the owner, as is frequently the case where the agglutination test is used, the results are questionable.

The fact that all the responsibility is placed on one efficient and qualified man is important. It is not delegated to several persons who may have more financial than professional interest as is too often the case under present conditions. It also places a more or less standardized product in proper hands.

Factors to Consider

The most convenient way to conduct pullorin testing is by cooperating with the hatcheryman. His help and influence may be used to a great advantage in lining up the flocks. The following points among others, are important in running the pullorin test.

1. Use a reliable pullorin from a reliable source, and be thoroughly familiar with the toxicity, potency, and action of the product.

2. Exercise proper technique in making injections.

3. Carefully examine each bird for reactions at the proper hour. This can be accomplished only by feeling each wattle.

4. Reject all suspicious birds. The small price of a hen does not warrant keeping a questionable individual in the flock.

5. Thoroughly brand all reactors by removing the legband and bobbing the tail or wing. By so doing, the hatcheryman may also check up on his flock owners and see that all reactors are removed.

Handling Birds

Catching the birds takes more time than the testing. It will usually pay to employ an assistant, who is a hustler, to aid in handling the flocks. A time saving piece of equipment that one should carry is a roll of ordinary heavy crib wire netting, twenty feet in length. One end may be tacked to the coop wall and the free end used to encircle a number of birds. The assistants should be in this enclosure. The most convenient way to handle birds is to grasp two, three, or four pairs of legs in the right hand. Then lay the birds out over the raised left forearm, and hold them up over the wire. Here the operator may grasp the wattle and make the injection. There is much less flapping around and the birds are much less disturbed when handled three or four at a time in this manner, than where one bird is restrained separately as must be done in bleeding.

Profitable Work for the Practitioner

The veterinarian greatly enlarges his field, makes many new contacts, and receives much favorable advertising by doing this work. At the same time, he is called upon to perform other tasks. Incidentally, the tuberculin test may be administered simultaneously with the pullorin test. Financial returns are not to be overlooked. This work will be done by someone and rightfully belongs to the veterinarian in the field who is looking after other disease conditions there. Why are practitioners not taking advantage of these opportunities?

Many practitioners do not feel justified in giving the agglutination test their complete personal supervision, both because of the time involved and economic conditions. Utilization of layman assistants unquestionably in many instances defeats its own purpose. The pullorin test is necessarily the veterinarian's test. It is evident that as such, it is the most suitable, most effective, and most beneficial to all parties concerned.

The practitioner will accomplish the most for the cause and for himself by realizing these facts and educating the hatcherymen and the public to that effect. The research man will accomplish much by developing a higher quality pullorin.

Developmental Error in Genital Tract of a Dog

By D. B. CRANE, Ithaca, New York
N. Y. S. V. C., '31

THE animal was a six-month-old brindle English bulldog, slightly undersized for its age. The owner noticed a peculiarity in the formation of the genital tract and brought it to the clinic of the New York State Veterinary College March 5.

The anterior third of the sheath was joined only on the upper, or anterior, surface, allowing the penis to lie uncovered (Fig. A, 4). The outer layers of the skin on the middle third of the sheath had also failed to fuse, but the separation was not as distinct as in the anterior third, because the fascia prevented too wide a separation (Fig. A, 3). The penis was under-developed (Fig. B).

There was no urethral opening in the penis. The penile portion of the urethra had not developed. The urethral opened through the skin about one and one-half inches anterior to the anus (Fig. A, 1). Although the penis was entirely flaccid (Fig. B), a bone was found when it was transected. The scrotum had failed to develop and the testes were under the skin in the inguinal region (Fig. A, 2).

Treatment

Three-eighths of a grain of morphin was the only anesthetic used. An incision was made on each side of the penis from the anterior attachment of the sheathe to a point about two inches anterior to the external opening of the urethra. The penis, prepuce, and sheathe were dissected loose, and the penis transected at the caudal end of the incision. The testes were removed though the opening left by the removal of the penis, thus avoiding two extra incisions. The opening was closed by means of a row of mattress sutures. The urethra and skin over the external opening was slit about one-quarter of an inch, to provide a larger opening and make urination easier.

It was impossible to keep the area aspetic because of the urine from the opening of the urethra, and because the dog tore and pushed the bandage out of place. March 7 there was a hot swelling the size and shape of a cigarette on each side of the incision. When opened, about a teaspoonful of pus and blood was removed from each side. March 8 there was a swelling on the left side the size of a hen's egg. It was hot and hard. All stitches except the most anterior were removed, and the cut opened. About two ounces of pus was removed and the wound washed with chlorezene solution. March 9 there was a swelling the size of a walnut on each side; this was opened and washed. A teaspoonful of pus was obtained from each side. This was repeated on the 10th. March 11 the swelling was slightly reduced and the treatment repeated. The dog was thin and wasted but vigorous. On the 16th the swelling was greatly reduced and only a slight amount of pus removed. The animal was rapidly gaining in flesh and vigor. It was discharged on March 19th.

Discussion

Although the scrotum, which develops from the genital swellings in early embryonic life, had failed entirely to develop, the animal was not cryptorchid. Both testes had descended and were directly under the skin in the inguinal region. The genital folds, from which the prepuce is formed, failed to fuse on the median raphe of the penis, exposing a small, solid, white body. This white body has been referred to as the penis. However, it is probably a misformed glans. The glans of the dog is normally long, extending over the entire length of the penis.

The corpora cavernosa penis, which develop in the ischial region and are continued as a bone, the os penis, from about the middle of the penis, could not be distinguished. It is difficult to understand why this should be so, since the os penis is nor-

mally only a continuation of the corpora cavernosa.

A parallel condition was found in the case of the corpus cavernosum urethral, which is normally found in the groove on the urethral surface of the body of the penis. It was not apparent in this dog, but in the center of the penis it formed the bi-lobed expansion, the bulbus urethrae, which was almost of normal size for a pup of this age.

In conversation with Doctor W. L. Williams, he expressed the belief that there is a slight dilatation of the lateral ventricles of

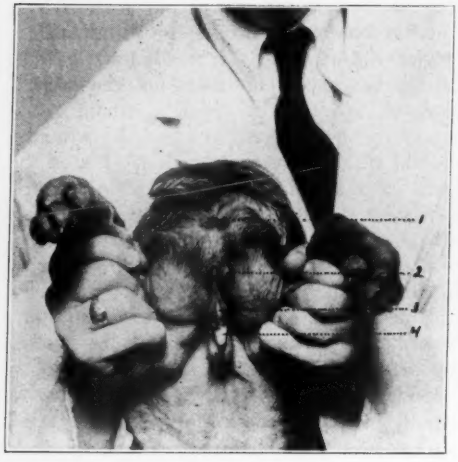


Fig. A.

the brain. Since the brain and nerve tissue are the first to be formed in the embryo, any malformation of them may cause malformation in other parts of the fetus. Records of human autopsies show a definite relationship between dilation of the ventricles of the brain and malformation of the extremities, such as club feet. Veterinary postmortem records of abnormalities of the brain are very incomplete, but seem to show a closer relationship between malformations of the brain and malformations of the genital tract than the limbs.

There is a case report in the records of the small animal clinic of the Cornell Veterinary College of an autopsy upon an exactly similar case, in which a marked case of hydrocephalus was found.

Althougth this case was diagnosed as hypospadia, there is a doubt as to whether or not it was true hypospadia, since in true

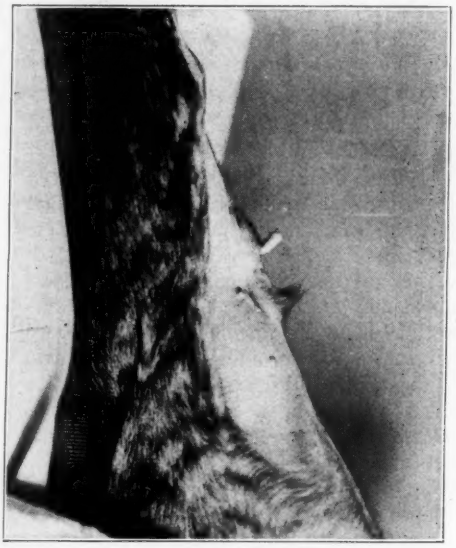


Fig. B.

hypospadia the opening of the urethra is on the posterior surface of the penis, while in this case the opening was posterior to the penis, being but one and one-half inches anterior to the anus.

NEW CALF FEED

Excellent results have been secured at Cornell University from a new calf-feeding mixture. Only 325 pounds of whole milk were used during the first 17 weeks. The mixture fed included 320 pounds of ground yellow corn, 320 pounds of rolled oats, 320 pounds of winter wheat bran, 160 pounds of linseed meal, and 880 pounds of dry skimmilk. The calves were fed this starter for the first 16 weeks. They were then changed to a cheaper ration including 300 pounds each of yellow cornmeal, ground oats, and wheat bran, and 100 pounds of linseed oilmeal. The calf starter ration was limited to 5 pounds daily and the later ration to 4 pounds. Hay was fed liberally. Using New York feed costs, the total cost of raising the heifers to six months was $36.—*Successful Farming.*

Reconstruction of an Obliterated Prepuce in a Bull

By EDWARD WILLIAM WILSON, Manhattan, Kan.
K. S. C., '31

A TEN-YEAR-OLD Hereford bull was brought to the veterinary hospital of the Kansas State College with the following history:

Some time in November, 1930, he received a lacerated wound across the ventral abdominal region five or six inches posterior to the anterior end of the prepuce. The wound gradually healed and some time later inability to copulate was observed. No treatment was attempted, however, until he was brought to the clinic in February, 1931.

At our first introduction to the case he showed his willingness to defend himself; therefore proper precautions were taken to avoid accidents.

Diagnosis: The animal was restrained by securing him in lateral recumbency on the large animal operating table.

Careful examination disclosed that he had a small fistula surrounded by a fluctuating swelling about four inches in diameter and five inches posterior to the anterior preputial orifice. It was also discovered that the mucous membrane of the fore part of the prepuce had been destroyed and the healing process had resulted in complete closure of the section of prepuce anterior to the fistula.

It was evident that surgical interference was imperative.

Treatment: The operative area was shaved and disinfected with tincture of iodin. Fifty cubic centimeters of a 1% procaine solution was infiltrated in the tissues for local anesthesia.

The fistula was then enlarged to permit the entrance of the finger for exploratory purposes. The swelling was found to be a urinary retention at the anterior end of the unaffected portion of the prepuce and anterior to the foremost extremity of the retracted penis. It contained urine and a few calcareous deposits of urine salts.

After discussing several methods of procedure it was decided to attempt to reconstruct the preputial canal in its original location. To accomplish this a short incision was made across the anterior closed end of the prepuce. A probe pointed instrument was then forced through the tissues to meet the end of the uninjured portion of the prepuce. The improvised canal was then dilated to the necessary diameter by a pair of large dressing forceps.

A section of rubber tubing one inch in diameter was then passed in at the enlarged fistula opening, through the improvised canal and secured in position by tying the ends together.

The animal was observed daily to make certain that the resulting swelling did not interfere with urination.

Fourteen days later the rubber tube was removed and the canal flushed through with mineral oil daily. It was hoped by this treatment to keep the canal open and an attempt was made to heal the fistulous opening. However the urine continued to flow through the fistulous opening despite efforts to block it and six days later the canal was found to be closing.

The canal was re-enlarged by curetting out some of the tissue forming the stricture and the same daily treatment followed as before.

In a few days it was obvious that the canal would not remain potent under this treatment. Therefore a cylinder of hollow hard wood, one and a quarter inches in diameter outside measure, was procured and placed in the canal so that it extended from the anterior end of the prepuce to a little posterior to the fistulous opening, for the passage of the urine.

The first cylinder, because it was smooth, was soon pressed out and lost in the bedding. However another cylinder was procured and by designing it with a few circular corrugations and slightly shorter than the first it seemed to retain itself in position reasonably well.

This treatment has been successful in producing the desired canal, however it will be a relatively long time before we can be sure that the cure is permanent. Therefore our prognosis is "guarded" concerning the final result of this case, but it is interesting to observe what may be done with seemingly very unfavorable cases and very simple treatment.

ECLAMPSIA IN A BITCH

April 7, 1931, a fox terrier bitch was presented at the clinic of the Veterinary Division of the Kansas State College. The animal was having clonic spasms.

History—The owners had first noticed this bitch having spasms about an hour previously. She was nursing five puppies which were four weeks old. She had a very large mammary development. No teatment had been attempted by the owner, as he thought she was poisoned.

Symptoms—The animal showed typical clonic spasms.

Diagnosis—Considering the history and after examining the dog a diagnosis of eclampsia was made.

Treatment—The hair was clipped from the area over the external saphenous vein on the lateral aspect of the right leg. The area was then shaved and cleaned with alcohol. A 20-gauge, one-inch hypodermic needle was introduced into the saphenous vein and seven cc. of a 20% solution of calcium chlorid was injected. The clonic spasms stopped as soon as the needle was removed from the vein. In a minute or two the animal started to retch and vomited until the stomach was emptied. Immediately afterward she got up and walked around the room. She had a staggering gait at first but soon walked normally. The owner was advised to allow the mother to be with pups only part of the time to prevent a possible recurrence of the condition. This is the second case of eclampsia that has been successfully treated with calcium chloride at this clinic. It is a new treatment and the results have been very satisfactory.

Manhattan, Kan. Robert B. Helming.
K. S. C., '31.

CALCIUM CHLORID TREATMENT OF MILK FEVER

This call was made to see a cow that had gone down sometime during the previous night and had lain upon the cold ground in a chilling north wind until the call was made at nine o'clock in the morning.

The cow, a registered Jersey, weighing about 900 pounds, had calved the preceding day and had appeared normal at seven o'clock in the evening.

She had cold extremities, head and legs extended, a subnormal temperature (99° F.), widely dilated pupils, and was in a comatose condition. A diagnosis of parturient paresis was made and the calcium chlorid treatment administered immediately.

The area of injection was properly cleaned and painted with tincture of iodin and 70cc of a 20% solution of calcium chlorid injected into the jugular vein.

The patient soon showed pronounced dyspnea along with opisthotonic convulsions, after five minutes she rested more easily and in a short time she was able, with some assistance, to gain the normal sternal resting position. After a few more minutes of rest, or just 25 minutes after the injection of the calcium chlorid, the cow rose to her feet and walked unassisted and with considerable vigor, more than 100 yards to the stable.

The cow made an uneventful recovery without further attention and is in her best year of production.

Undoubtedly this method of treatment is more desirable than the inflation method. It is more scientific, eliminates practically all danger of infection, gets quicker results, and can be administered with more ease. The client is usually well pleased with the outcome with the exception of the stage of recovery in which the animal shows convulsions. If this particular stage could be eliminated, perhaps by some change in the product used, we would have *the ideal* treatment for milk fever.

Manhattan, Kan. F. C. Love,
K. S. C., '31.

Atresia of the Naso-lachrymal Duct

By CARL J. MAJERUS, Manhattan, Kan.
K. S. C., '31

A HIGH grade Percheron colt, nine months of age, was brought to the Kansas State College veterinary clinic on December 31, 1930.

From birth the colt had a muco-purulent discharge from the medial canthus of each eye. The discharge ran down over the sides of the face, causing an unsightly condition shown by the accompanying photograph.

A neighboring non-graduate practitioner had been called on the case and had advised the owner to take the colt to the college where he could have the colt's eyes operated upon—supposedly to have the eye balls tapped.

Upon its presentation at the clinic the animal showed a muco-purulent discharge from the medial canthus of each eye. The colt was given a general examination and found to be normal in every respect except for the eye condition. A tentative diagnosis of occlusion of the naso-lachrymal duct was made.

Examination of the nasal cavity disclosed no opening of the naso-lachrymal duct on the floor of the cavity at the junction of the skin and nasal mucous membrane where it normally should be.

The puncta, or ocular openings of the duct, are two in number and are located, one in the upper and one in the lower lid, just within the free margin of the lid and about ¼ inch from the medial commissure. A silver wire probe was passed into the punctum of the lower lid and directed medially for a distance of about ¾ inch then downward and forward in the general direction of the naso-lachrymal duct. After about ten inches of the silver wire probe had been passed into the duct further passage was arrested and the probe was withdrawn.

A positive diagnosis of atresia of the nasal opening of the naso-lachrymal duct was made.

A small syringe, filled with a 1% flavine solution and equipped with a blunt pointed needle, was procured. This needle was then inserted into the punctum of the lower lid and, while holding the opening in the upper lid closed, pressure was exerted upon the plunger of the syringe. As pressure was applied the naso-lachrymal canal was distended and the mucous membrane covering the nasal opening of the duct was raised up

Effects of occlusion of the naso-lachrymal duct.

in the form of a small blister. This blister was then incised with a sharp pointed bistoury. The antiseptic solution of flavine then flowed through the duct with very little pressure upon the syringe. The silver wire was again passed through the entire length of the duct and the ends turned; thus anchoring the probe which was left in the duct as a wire seton.

The duct on the opposite side, being affected in a similar way, was operated upon and rectified in the same manner.

The hemorrhage following the operation was controlled by injecting hydrogen peroxide into the nasal cavity.

After two days the wire setons were removed and the ducts flushed from above downward with a 1% solution of flavine. The ducts were flushed once daily for four days; then every other day until the wound in the nasal cavity healed.

The lachrymal secretions were now discharged in the proper physiological manner, that is through the duct and into the nasal cavity.

A condition simulating atresia of the lachrymal duct is often seen at the clinic. This manifestation is simply an occlusion of the duct with dust or some other foreign material. It occurs in horses especially those which are doing field work during the dry season when much dust is in the air.

These cases are treated in the following manner: A syringe, equipped with a blunt pointed needle, is filled with a solution of some mild nonirritating antiseptic. The needle is then inserted into the inferior opening of the duct on the floor of the nasal cavity. The antiseptic solution is then forced through the duct and it escapes at the medial canthus bringing out with it the muddy sediment which was responsible for the occlusion.

This simple operation can be performed by any graduate veterinarian and it greatly improves the animal's appearance.

LAMENESS IN SORREL HORSES

I have been engaged chiefly in horse practice for more than 30 years and as I recall it, more than 95% of the sorrel horses that have been brought to my attention because of lameness, were lame in the front feet. And, of all the lame horses I have treated, sorrels have largely predominated.

It strikes me that sorrel horses have a predisposition to lameness in the front feet. I would like to know if others have noted this in their equine practice.

Ossining, N. Y. Ralph C. Jenks.

VAGINAL CYSTOCELE

April 3, 1931, a call was made to treat a ten-year-old Hereford cow. The cow had calved 48 hours previous to the call and was found to have a prolapse of the floor and right wall of the vagina which contained the bladder, constituting what is known as a vaginal cystocele.

The prolapsed portion was severely inflamed, thickened and very painful which caused continual, severe straining on the part of the cow. Violent straining of the cow would cause the posterior portion of the cervix to be exposed at the lips of the vulva and it was blue-black in color.

In order to control the straining a sixteen-gauge, two-inch needle was inserted between the last sacral and first coccygeal vertebra and 20cc of a 1% procaine solution was injected into the epidural space. Within five minutes all efforts at straining had ceased and the parts were returned to their normal position with practically no effort on the part of the operator.

It has been found that iodoform suspended in a bland oil such as mineral oil is very soothing to irritated parts and does a great deal to overcome the straining and infection. This was liberally applied to the inflamed and irritated organs. Tape sutures were then inserted in the thick skin about three inches lateral to the lips of the vulva and bandage material was passed across the lips of the vulva and tightly tied.

The cow later appeared to strain very violently, so it was deemed advisable to place a harness on the cow to assist in keeping the parts in proper position.

The accompanying illustration and description describes a very efficient and simple method of placing a harness on a cow for this or a like purpose.

A lariat rope was doubled and the loop placed under the animal's tail, the rope was then passed up the back as far as the neck, knots being tied, one over the lumbar region, one back of the withers and another just in front of the withers, the free ends were passed down one on either side of the neck and tied together at the brisket, then passed between the front legs from before

backwards up on each side of the thorax where they were tied together just back of the withers. Another piece of rope was then passed through the loop under the tail bringing the union directly over the vulva and the free ends passed down between the hind legs, up over the abdomen and tied together over the lumbar region. The rope should be kept taut as this lessens straining and prevents the animal from getting out of the harness. This was kept on for four days, then removed along with the bandages and sutures. Excellent results followed.

E. R. Trull,
Manhattan, Kan. K. S. C., '31.

RABIES IN A DOG

March 21, 1931, a brown and white mongrel dog was presented at the Kansas State College veterinary clinic.

A probable diagnosis of rabies was made

Rabies.

because of the peculiar sagged look on the dog's face and the history of the dog. It had been doing unusual things the last day or two, like chasing a goat and guarding objects for no definite reason.

The owner was advised to leave the dog at the hospital for observation but he insisted on taking the dog home after promising to keep it confined for 14 days.

Three days later the dog was again brought to the clinic. This time there was no doubt about the dog's having rabies, as he had characteristic symptoms such as slight paralysis of the lower jaw and a protrusion of the membrana nictitans as shown in the picture. He would snap and bite at everything. His mouth was badly lacerated from biting hard, sharp objects.

The dog died two days later. On post mortem there was a gastritis, also a mucopurulent enteritis probably due to a heavy infection with round worms, *Belascaris marginata;* tape worms, *Dipylidium caninum;* and hook worms, *Ancylostoma caninum.*

Microscopic examination of the brain was positive for Negri bodies.

Fred Storz,
Manhattan, Kan. K. S. C., '31.

A CASE OF GLOSSITIS IN A DOG

On March 16, 1931, a tan hound, nine months of age, was received at the Ohio State University Veterinary Clinic.

The history of the case was that the dog had been fed a beef heart the evening before. Since that time he had slobbered and clawed at his tongue until it was greatly swollen, and he could no longer swallow.

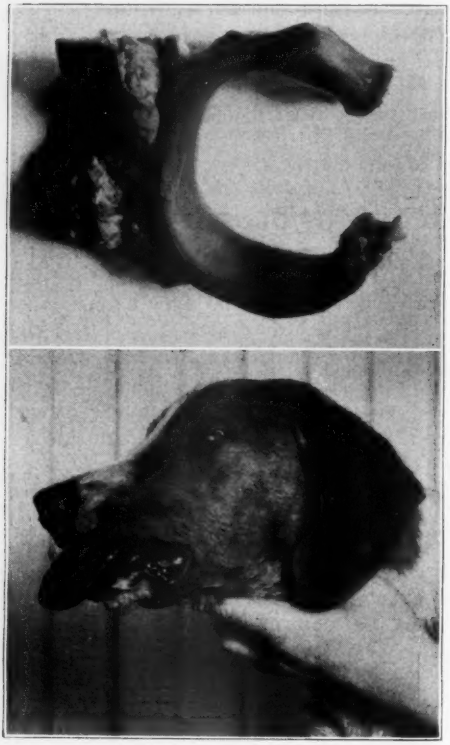
The examination revealed excessive salivation, the front legs being encrusted with dried saliva and blood. The tongue, greatly enlarged and nearly black in color, was protruding about two inches from the mouth. The pulse, respiration and temperature were all somewhat above normal. A speculum was placed in the animal's mouth and it was noted that the frenum linguae was entirely torn loose; the tongue being greatly lacerated on the ventral surface. The tongue was pulled forward and a band of tissue exposed, entirely encircling the tongue at its base.

The ring was removed by incising it with a pair of scissors. The animal at once showed great relief, but continued to claw at his tongue. The organ involved showed no evidence of circulation or sensation, but it was decided to await

results in the hope that a part of the tongue might be saved.

Since the circulation in the tongue had been inhibited for approximately twenty-one hours, an unfavorable prognosis was rendered. The owner was advised to have the dog hospitalized to await developments.

The following day these symptoms were noted: Temperature 102.4° F., tongue, little changed in appearance, with



Above: Fibrous band, probably section of aorta, removed from dog's tongue. Below: The dog before removal of the fibrous band shown above from the tongue.

necrosis of the mucous membrane, both on the surface of the organ and the surrounding tissue of the mouth. A mouth wash of potassium chlorate (1 to 12) was used. Food and water were given artificially. The feet were hobbled to prevent clawing.

On the third day the temperature was 103.2° F. and necrosis was rapidly taking place. The same treatment was administered and again both food and water were given artificially.

The fourth day showed the temperature to be 103° F. The tongue had sloughed off close to the base, leaving a raw suppurating surface. The dog was very hungry and thirsty. The mouth wash was again used, followed by artificial feeding and watering.

In two more days the temperature was again normal and healthy granulations were forming over the necrosed surface. The animal could not eat or drink of his own accord, but was becoming adept at taking food and water when placed in his mouth.

The owner wished to have the dog destroyed. This was done on the following day.

The illustrations show the dog as he was presented at the clinic and the fibrous band which entirely encircled the tongue. This was believed to be a section of the aorta at its junction with the heart.

Walter C. Ferrall,
Columbus, Ohio. O. S. U., '31.

DISEASE FOES OF RABBIT INDUSTRY

Parasitic diseases, particularly harmful to rabbits, are coccidiosis, ear mange or ear canker, skin mange, and stomach-worm disease. Fleas, lice, and intestinal worms of various sorts also cause parasitic affections. Many of these diseases spread from one animal to another either as the result of close contact or because of the use of infested hutches and equipment. Prevention of internal parasites, such as coccidia and worms, consists partly in frequent thorough cleaning of hutches, or in having them so constructed with wire-mesh that the droppings will pass through thus preventing contamination of the animals.

Of the infectious bacterial diseases, hemorrhagic septicemia is one of the

most serious. It causes a high mortality and runs a rapid course as a rule, the animals usually dying in from 24 to 36 hours. Tularemia, although reported only in wild animals, is known to be transmissible to domestic rabbits. Contagious nasal catarrh (snuffles), pneumonia, indigestion, diarrhea (scours), constipation and sore hocks are also menacing to the rabbit industry.

A classified discussion of these parasitic and bacterial foes of rabbits appears in Farmers' Bulletin 1568-F, Rabbit Parasites and Diseases, just issued in revised form. As long as the supply lasts, copies may be obtained free from the Office of Information, U. S. Department of Agriculture, Washington, D. C.

EXTIRPATION OF THE EYE BALL

March 23, 1931, a Hereford cow was brought to the clinic of the Veterinary Division of the Kansas State College with an enormous cauliflower-like growth attached to and covering the greater part of the cornea. The conjunctiva was inflamed and congested, the lids were swollen and painful, and large quantities of lachrymal secretion and pus were discharged from the eye. Since the function of the eye was destroyed the removal of the eye ball was indicated as the line of treatment.

This operation was performed on the patient in a lateral recombency and under the influence of local anesthesia. The area around the eye was shaved, and thoroughly cleansed with a 2% solution of mercurochrome. The operative area was then infiltrated with a 2% procaine solution and the eye lids sutured together with several strong interrupted tape sutures. An incision was made through the skin and encircling the entire palpebral opening about three-fourths of an inch from the ciliary margin of each eyelid. This incision was extended downward to the conjunctiva and by careful dissection the skin of the lids was separated from the conjunctiva. By blunt dissection the separation of the tissues was carried posteriorly and the entire eye loosened from its socket. By using a pair of curved scissors the ocular muscles and the optic nerve were severed, and the ocular globe, the third eyelid, and diseased tissue were removed.

The wound was packed with gauze impregnated in "bipp," and the margins of the wound closed with several interrupted braided silk sutures.

The tampon was removed in two days, and the wound flushed daily with a preparation of bismuth subnitrate and iodoform in mineral oil. The stitches were removed in two weeks. The cow made an uneventful recovery.

The surgical removal of the eye-ball is very often successfully resorted to in the veterinary clinic at the Kansas State College. Very good results have been obtained in both horses and cattle.

This operation is performed on cattle for carcinomata that have implicated the orbit to such an extent that milder treatments are of no value. This condition is encountered more often in the Hereford than in other breeds of cattle.

Manhattan, Kan. Andrew L. McBride,
K. S. C., '31.

CREAMING OF BOTTLED MILK

The essentials of securing the maximum cream layer volumes on pasteurized milk of a given fat content are as follows:

1. The fat globules should be retained in their normal condition by prevention of excessive churning, agitation, freezing, or oiling off.

2. Pasteurization should be slightly less than 145° F for a holding period of 30 minutes.

3. Milk should be cooled by a surface tubular cooler to 40° F or below and bottled immediately.

4. The milk should be sold in 2 to 6 hours after bottling, as the cream layer volume shrinks on standing.

5. The milk should be held at 40° F or below, for the cream shrinks in volume very markedly at 50° F or above.

—Tech. Bul. No. 157, N. Y. Agr. Exp. Sta.

Posterior Paralysis in Dogs a Clinical Entity

By W. J. PRICE, Manhattan, Kansas
K. S. C., '31

THERE have been presented at the Veterinary Clinic of the Kansas State College clinic, in the past two years, some twenty cases of posterior paralysis in dogs. The condition is now recognized as a separate and distinct clinical entity.

Nothing out of the ordinary in the way of history was evident in any two of the cases. The owner would usually state that the condition had come on quite suddenly with almost complete loss of function of the posterior limbs.

The dogs presented were of the larger and more active types. The breeds represented were foxhound, German and English shepherds, and collies. In not a single case was there an inactive type of house dog presented.

A thorough check-up revealed nothing outstanding. There was usually obstipation which is always to be expected in any case of posterior paralysis. If the owner had delayed bringing the animal to the clinic long enough, an intestinal toxemia might be present, manifesting itself by congested mucous membranes and a slight elevation in temperature.

Treatment in a general way has consisted of daily enemas, and glucose in 20-40cc doses given intravenously every other day, using a 20% solution. Some received blood transfusions whenever suitable blood was available. Some cases were exposed to ultra-violet ray treatment for 30 minutes daily. The most consistent treatment and perhaps the most beneficial, consisted in lifting the dog to his feet and aiding him to stand, thus encouraging walking. This process of tutoring carried out two or three times daily has a very beneficial affect. At least 80% of the cases handled similarly recovered.

I will attempt to describe a particular case which presented a history and symptoms somewhat out of the ordinary run of cases. A rather large, robust, "coon hound," was presented to our clinic on February 2, 1931. He was a five-year-old dog, purchased in Missouri last October. A very affectionate owner gave us the history in detail. A coon hound through this section of the country has an economic as well as a sentimental value. Two weeks previous to the time the dog was brought in he had overtaken a coon on some rather thin ice. In the fight which followed, the ice gave way and both the raccoon and the dog went under, staying several moments. When they came to the top the dog was in an exhausted condition, while the coon had a secure hold on his right front leg where he left some deep tooth marks.

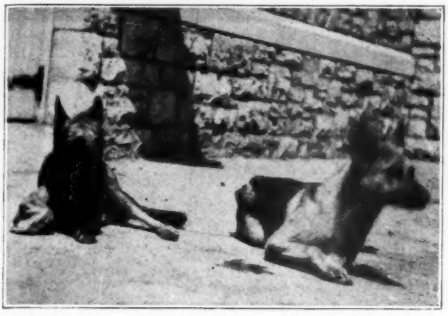
The dog remained lame in his right front leg for about a week after which he suddenly became paralyzed not only in the posterior limbs but in all four. He was kept at home for another week before being brought to the clinic for treatment.

He was unable to bear any weight at all on his limbs and presented a very depressed and exhausted picture. A fecal examination for parasite eggs gave negative results. Temperature and mucous membranes were normal. Excepting the paralysis there were no visible symptoms.

The dog was given an enema and an excessive amount of fecal material removed. He was then given 40cc of 20% glucose solution intravenously. For the following ten days, daily enemas were given and he was exposed for 30 minutes daily to ultra violet rays. He was lifted to his feet and an attempt made to get him to stand alone. This treatment was tried two or three times daily, with but little success although an improvement could be noticed. The enemas were of physiological salt solution.

On February 11, 150cc of homologous

blood was administered intravenously, taken from a normal healthy dog. He was then put on arsenic being given a triple arsenate tablet every day for eight days. On February 16, another blood transfusion of 240cc of homologous serum was administered as before. By February 20 he was able to stand alone and the daily enemas were dispensed with, and a daily dose of one ounce of mineral oil given instead. February 23 a cystitis developed, a bloody purulent discharge was excreted with the urine. This condition soon cleared up by giving the usual dose of hexamethylenamine, daily.



Posterior Paralysis of Dogs.

The dog was always cheerful and maintained a good appetite although rations were cut down to keep down excessive weight. He was sent home March 10th quite active and almost normal excepting for tiring easily. He is apparently normal and in health now. (March 31, 1931.)

In concluding it might be said that the condition exists as a separate and distinct clinical entity. We have observed it only in the larger, more active breeds of dogs. Apparently it is non-contagious, although the cause is unknown. The best treatment perhaps as in many other conditions is symptomatic, with careful nursing rather than any "presto-chango" medication. In order to keep abreast with times Calcium Theraphy might be worth a trial.

Some search of literature has revealed only one mention of a similar condition—that by Dr. John W. Brown, in the July 1929 issue of VETERINARY MEDICINE. My wish is simply to report our experience.

IOWA'S TUBERCULIN TEST WAR

After leading all of the states in the number of cattle tuberculin tested in January and February, Iowa, in March and April staged the most spectacular protest against tuberculin testing that has yet occurred, or is likely to occur, since obstruction to the bovine tuberculosis eradication project in this country has been rare in recent years and is becoming rarer.

The embattled farmers in Cedar County, Iowa, and to a less extent of Mitchell County, staged a protest against the testing of their cattle that exceeded anything in the history of this work. First, a delegation numbering 1,000 or more, descended upon the Legislature at Des Moines, and getting no solace there, turned its attention to Gov. Dan Turner.

Governor Turner's attitude in the matter has been severely criticized in the Iowa press and deplored by the press elsewhere. He is pictured not as vigorously enforcing the laws of the state, which it is his sworn duty to do, but as bending over an adding machine in frenzied computation of the votes to be marshalled by each side. He is quoted as having said: "I have to enforce the law, but I guarantee you that so far as lies within my power, your rights shall be maintained and your lives and property protected." Which was just pure hokum. Lives were not endangered by the operation of the law and the property he would protect as far as lay within his power was diseased animals, a menace to neighboring herds. The rights he would maintain was the privilege of selling tuberculous milk to be fed to babies in Iowa and Illinois, and of course to kill with tuberculosis a certain percentage of them and cripple others with pitiful hunch backs and pain-racking hip disease.

There are those, however, that side with Governor Turner and call his dilatory tactics moderation that probably avoided bloodshed, and point out that in the end tuberculin testing in Cedar County has continued and that all the cattle in the county will probably be tested soon. It required a detachment of the state militia, however, to permit

the Department of Agriculture to test the animals.

An idea of the profound ignorance of the objectors or their baseness may be obtained from their charges that the tuberculin test is not efficient, practical or reliable; that it lowers the vitality of the animals and causes Bang's disease and other ailments, and that it is a scheme promulgated by the veterinarians for the sole purpose of obtaining fees for their testing.

The absurdity of the first two claims requires no comment, and as for the charge against the veterinarians, surely even the objectors were not too ignorant to know that the testing was being done by the state Department of Agriculture under the mandate of state legislature and that the veterinarians, as such, were concerned in the work only because they were employed by the Department of Agriculture to do it.

EXTRACTION OF 4TH SUPERIOR MOLAR IN THE DOG

Among the many cases presented at the clinic of the Veterianry Division of the Kansas State College are dental cases in the dog.

Meadows, an aged greyhound, the most outstanding stud-dog of the breed in this country, was admitted to the clinic April 7, 1931, for physical examination.

Clinical observations revealed the following abnormalities. A foul breath, which upon checking the teeth, proved to be due to decay of the fourth molar tooth of the upper arcade. The gums were separted from the tooth at the gingival margin. They were inflamed and pain was evidenced when slight pressure was applied.

Treatment

The dog was assigned to the hospital, and the tooth extracted at once by Dr. E. J. Frick.

Operation

Due to the anatomical structure and direction in which the roots of this tooth are situated in the dog, it is not readily extracted as is the case of the other teeth in this animal, even though loosened by disease.

The necessitated removal of this tooth bears a twofold significance.

1. The principal object is to relieve pain and improve the general health of the dog, the causative factor being decay of the tooth.

2. Removal of the tooth to afford drainage of the maxillary sinus in the case of lachrymal fistula.

The removal of the tooth is advisable and is the logical procedure since the lachrymal fistula will not respond to other therapeutic measures.

The operation is best performed with the patient in the standing position placed upon a table equipped for raising or lowering to accommodate the desired height, which is regulated according to the size of the dog subjected to the operation. Some operators prefer to secure the patient upon the operating table in dorsal recumbency, but this places the mouth of the dog in an awkward position.

Nerve blocking is the ideal type of anesthesia.

The instruments of choice for administrating anesthesia are a glass hyperdermic syringe which is easy to sterilize and convenient to handle, and a 20-gauge needle two inches long.

Procaine has been the preferred anesthetic, because it is constant in action and is comparatively non-toxic.

The infra-orbital nerves are the largest branches of the maxillary nerve. They pass through the infra-orbital canal and contribute filaments to the teeth called dental branches.

To block the infra-orbital nerve, select a point about one and one-half inches below the lateral canthus of the eye in the space between the posterior border of the malar bone and the anterior border of the coronoid process of the mandible.

The field should be shaved and disinfected and an insensitive wheal made in the skin at the point of insertion of the needle. The needle is inserted vertically through the soft tissues in the space between the outer border of the coronoid process of the mandible and the malar bone until it passes the edge of the latter. It is then directed forward along

an imaginary line that would reach the gingival margin of the upper incisor teeth, until the point of the needle reaches the maxillary foramen where the nerve is lodged and the injection is to be made. This is at a depth of approximately one-and-one-half inches from the surface in a dog of average size. Inject 2cc of a 2% procaine solution. Incline the dog's head downward so the solution will remain around the nerve. Anesthesia should be complete in ten minutes and last for approximately twenty minutes.

Skull showing steps in the removal of the fourth molar.

After the anesthesia was complete a piece of tape was placed around each jaw behind the canine teeth and held by an assistant. By upward and downward traction of the tape speculum the jaws were separated to permit the introduction of instruments into the patient's mouth.

The first step in extraction of this tooth consists in dividing the tooth into anterior and posterior halves with a pair of bone cutters. The second step is to grasp the posterior half of the tooth with a pair of canine tooth forceps, and pull in a downward and forward direction. The third and last step consists of pulling the remaining section of the tooth in a downward and backward direction. When these steps are followed, extraction of the fourth molar tooth is comparatively easy.

After Treatment

The dental cavity was flushed daily with a 1% potassium permanganate solution for its deodorizing effect as well as to render asepsis.

John B. Cheshire, K. S. C., '31.
Manhattan, Kan.

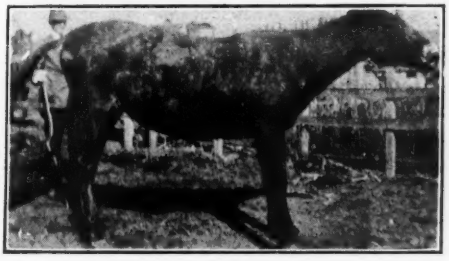
Reference: Frank, Dr. E. R.: Dental Anesthesia in the Dog. Jour. A. V. M. A. LXXIII (June 1928), n. s. 26, (2) pp. 232-233.

VACCINATION AGAINST BANG'S DISEASE GIVES PROMISING RESULTS

One of the most promising experiments in control methods for Bang's disease, is the use of vaccine in preventing infection of healthy animals. Although previous investigations of the use of vaccine for this purpose have not proved very dependable, recent findings offer sufficient encouragement to justify continuing research, especially since many conditions would not permit other methods of dealing with the disease.

The experiments in this work have been largely with calves or young heifers since there is practically no danger of such animals carrying the infection to maturity. Of the sixteen heifers in this experiment, five were controls which received no vaccination, but all were exposed to the disease during the gestation periods. The results indicated that the vaccine protected the heifers against abortion, whereas most of the control animals aborted.

The results suggest that only strains of vaccine of low or medium virulence should be used, even in calfhood. The virulent strain seemed to persist in one of the calves for a considerable time.—John R. Mohler.



Fatal case of colic in a mule.

Hydrops Amnii in Holstein Cow

By DON H. SPANGLER, Manhattan, Kansas
K. S. C., '31

MARCH 15, a long distance telephone call was received at the veterinary clinic of the Kansas State College, from a dairyman living at some distance. He requested that one of the veterinarians call at his farm to treat a cow, which was down and very much bloated. Since it is the policy of the school to give the senior students as much actual field experience as possible, Dr. E. J. Frick and four students immediately called at the farm.

The cow, a six-year-old Holstein, weighing about 1200 pounds normally, had a much enlarged abdomen. On questioning the dairyman, we obtained the following history of the case: The cow had passed a clean tuberculin test about six months previously, she was, as nearly as he could figure out, due to calve in about a week. She had been noticeably ill for about a month, but up until the day of the call had always eaten well, and had drunk a normal quantity of water. She had gone down in the lot near the barn and the dairyman had been unable to get her up and into the barn.

On examination, we found that the animal had a greatly distended abdomen; in fact, on measuring, it was ascertained to be eleven feet in circumference. Her respirations were greatly impaired, due to pressure on the lungs. Her mucous membranes were very anemic, as would be expected in a case of increased pressure on the thoracic organs. The temperature was 104° F.; pulse, 112; and shallow respirations, 34 per minute. On auscultation of the heart, the heart sounds were found to be increased, but no abnormal sounds were heard. On percussion of the abdomen, the cause for the increased pressure was ascertained to be a liquid of some type. An absolute diagnosis was not made, but a laparotomy was most certainly indicated.

The site chosen for the laparotomy was in the upper left flank, the same as in a rumenotomy operation. The area was shaved and carefully cleansed. The area was painted with tincture of iodin and anesthetized by infiltration of about 20cc. of a 2% procaine solution. By incising the skin and fascia and by tearing through the obliquus abdominus externus and obliquus abdominus internus in the direction of their fibres, the peritoneum was exposed. An incision was made through this and the search for the diseased organ was immediately ended, for the greatly distended uterus had to be held from prolapsing through the incision. On palpation of the uterus, a fetus could not be found. An incision was then made through the thinned uterine wall and the foetal membranes punctured. A watery fluid immediately gushed forth. This fluid was accurately measured and 75 gallons was finally drawn off. It was certainly no wonder that the cow was depressed and unable to get up.

On palpation into the uterus a calf was finally felt on the floor of the abdomen. It was removed through the laparotomy incision. Its heart was pulsating strongly, but no respiration could be induced. Consequently, the heart stopped in a few minutes. The fetal membranes could not be removed at this time without damaging the uterus, so the incision into the uterus was sutured with chromic cat gut, using a Lembert suture. The peritoneum was also sutured with cat gut, but a continuous suture was deemed sufficient for this. The muscle walls were left unsutured, and the skin incision was closed by interrupted tape sutures.

The cow seemed in good condition, so no further treatment was deemed necessary at this time. The owner was instructed to place the animal in a clean, well-bedded stall, and to feed only highly nourishing food and not to allow her to drink an excessive quantity of water for a few days. Also he was

advised to have some veterinarian call in about three days to dilate the cervix of the animal and to remove the fetal membranes.

According to Williams, the causes of dropsy of the fetal membranes are not well determined; logically, it must finally be

Hydrops Amnii in a cow. The Abdomen was eleven feet in circumference.

ascribed to the functional derangement of the fetal kidneys, or of the fetal circulation. Sometimes the disease seems to depend largely upon the insufficient nourishment or improper diet of the mother, reflecting somehow upon the fetus. The fetus in this case did have enlarged suppurative kidneys, and the thoracic cavity was very edematous. The alveolar and interstitial edema of the fetal lungs accounted our inability to induce respiration.

USE LARGE DOSES OF BACTERINS

I have received so much good information from VETERINARY MEDICINE from time to time, that I often feel guilty of being selfish in not reporting my experiences more often when I run onto something unusual and particularly when I happen to be fortunate in handling it successfully.

You, of course, know that, it is very difficult for some veterinarians to write and I never have been accused of doing it easily or doing it well; but I have at last gathered courage to write something that may be of help to my brother practitioners, since so many have written things that have helped me. I want to refer to the use of bacterins. I am thoroughly convinced that, in the past, our dosage of bacterins has been too small.

Through articles by Dr. J. F. De Vine published in VETERINARY MEDICINE and elsewhere, I have received such good advice as to the advantages of larger and more frequent doses of bacterins that I would like to record a few of my own experiences.

Let us take a case of fistulous withers or poll evil. After doing the radical operation, I wait about four days, then give a 5cc. dose of an agar polyvalent mixed bacterin (equine); in 24 hours, 10cc. more; in 24 hours, 20cc.; in 48 hours, 30cc., and in 72 hours or a little longer, 30cc. more; then gradually drop back at intervals of a few days to 5cc. This procedure with the proper care of the wound has given me wonderful results.

I find the larger doses of bacterins equally as satisfactory in treating influenza in the horses and retained placenta and metritis in the cow. In the case of influenza I use equine influenza bacterin and, if the animal is sick, I follow out Dr. De Vine's instructions of giving very heavy doses and repeat them often. This in conjunction with the usual supportive treatment has given me results little short of phenomenal. I have likewise been fortunate in large stables and lumber camps in cutting down sickness by immunizing the exposed animals by at least three or four *increased* doses a few days apart.

In removing retained placentae from cows, I always end the job with a 10cc. dose of metritis mixed bacterin. This I am certain gives nature a push and, if the animal does not do well, and we have to return to see her, we have the advantage of having done the right thing as early as we could.

While mastitis bacterin does not seem to be as specific as some others, still I think that is largely due to our lack of knowledge on the subject and as soon as we know more about mastitis, bacterins will be one of the things that will help us in the prevention and treatment, even more than they do today.

I am absolutely sold on the big dose of

bacterins and I often wonder that no one ever thought of it before. I now realize that many a good animal went to the boneyard too soon just because we were over cautious.

Of course, it is now common knowledge among veterinarians who have to do with cattle practice that large frequent doses of hemorrhagic septicemia bacterin are practically a specific for this ailment. In the case of sick animals, I like to combine at least one large dose of serum—say 150 to 250cc. This with a good dose of bacterin, followed by a sufficient amount of bacterin, at proper intervals, that is, often enough give results that are simply wonderful.

Centralia, Wash. A. R. Galbraith.

SKIN DISEASES AND PARASITES*

There are no specialists in skin diseases in veterinary medicine, but there might well be. The skin of animals serves the following purposes:

1. Regulates the body temperature by varying radiation and evaporation of sweat.
2. Affords protection against bacteria.
3. Prevents mechanical injury and prevents drying of underlying tissue.

The cause of disease of the skin of animals may be classified as:

1. Mechanical injury.
2. Heat and cold.
3. Injurious chemicals.
4. Nutritional disturbances.
5. Infection.
6. Parasites.
7. Others.

Important skin mites affecting animals may be grouped as:

1. Sarcoptic.
2. Notoedric (cats, rabbits).
3. Cnemidocoptic (birds).
4. Psoroptic (sheep and cattle scab).
5. Chorioptic (feet).
6. Otodectic (dogs, cats and foxes).
7. Demodectic.
8. Dermanyssus (chicken mites).
9. Liponyssus (feather mites).

*Notes from an address by Dr. E. A. Benbrook, Ames, Iowa, at the 17th annual meeting of the Eastern Iowa Veterinary Association. Cedar Rapids, October 7-8, 1930.

An effective application for sarcoptic mites is: Balsam of Peru, 15 parts; Creolin 5 parts; alcohol 80 parts.

An effective application for scaly leg in chickens is: Sulphur 1 part; lard 9 parts or plain crude oil.

A serviceable application for ear mites in dogs is: Chloroform 1 part; olive oil 9 parts. Another preparation preferred by some is: Phenol 1 part; glycerin 99 parts.

The ordinary lime and sulphur dip is perhaps the best treatment for demodectic mange in the dog.

Bacterins are useful when there are many pustules.

A useful spray for the hen-house is made up of crank case oil one part, compound cresol solution one part; or it may be applied with a paint brush.

A useful dip for birds affected with feather mites consists of: Soap 1 ounce, sulphur 2 ounces, water 1 gallon.

NUTRITIVE ECLAMPSIA IN THE COW

I have been having more or less trouble since early last fall with a disease in Jersey cows. I cannot find anything covering the situation in any of my text books, so I will give my findings and treatment and will be glad to see a further discussion in your pages pertaining to this subject.

I have in the past treated many cases of eclampsia in cows some days after calving that were due to a sapremia or septicemia coming from a retained placenta. I have also seen a mania just before calving, but this condition is different in cause and effect and the main symptom is "goofeyness." I have found it anywhere from two weeks to six months after calving, and I am sure it is a second cousin to parturient paresis, a deficiency in glucose, calcium and phosphates, etc.

I attribute it to the drouth we experienced last summer. Probably there is something lacking in the food due to the dry weather; then again the farmers are

trying to save feed and do not feed enough of the right kind of feed.

The cows I have seen affected with this trouble are all heavy milkers and good individuals, the kind that require lots of good feed.

As I said before, I still find cows showing eclampsia symptoms such as off feed, grinding of the teeth, weak in the hind legs and a general sapremia from a retained afterbirth, but the tell-tale discharge is always there and on examination a putrid discharge or part of the placenta is found, and this is successfully treated by cleaning up the mess and giving purgatives, tonics, etc., but I have found cow after cow the past months in which the cause is very different.

The symptoms include weakness in the hind legs, grinding of the teeth, smacking of the lips. The head is held high as if a check rein was on and the eyes roll in their sockets. The cow stands in the attitude of eating, but does not touch anything, or if it does, will gnaw the fence or trough. At a distance one would think the cow was grazing, holding her head down as if grazing, but while not touching the grass, she will make motions as if she had been starved, smacking her lips and going in a circle always to the right or always to the left. Sometimes the animal falls down and has severe convulsions, is nervous and will not eat. Pulse will be fast, breathing hurried, and the temperature from 94 to 99 deg. F.

Purgatives always make the symptoms worse as do strychnin and nux vomica also. Not all cases have all the symptoms here enumerated but any combination of these may occur. The vagina and uterus are normal so far as I can tell, always clean if long after calving, or clean mucous if calving has been recent, like any normal cow would be; no odor, no matting of the tail, all are good milkers as is the case in milk fever.

The treatment I have successfully used is, if within ten days of calving or earlier, inflation of the udder and 50cc of a 50% glucose solution subcutaneously, followed by bitter tonic of gentian, and ginger with potassium iodid. If long after calving, I usually omit the inflation of the udder and have good results with the glucose alone. I have seen them within thirty minutes after the administration, appear normal in every respect, begin to eat at once, do well for one or two weeks and then have a recurrence, sometimes they never give any more trouble but if they do, the glucose will clear them up again in a very short time.

I always direct the feeding of bran and good hay and a liberal allowance of grain.

I will relate one of the strangest cases of this strange trouble. I was called one morning to see a Jersey cow six-years-old, a good milker, had calved six months previously and was four months pregnant. She was weak in the hind legs but still on her feet; temperature 96° F, and off feed. I thought I was dealing with some form of mold poisoning, and gave 1½ lbs. of magnesium sulphate, two ounces of aromatic spirits of ammonia and one dram of powdered charcoal in a drench, and strychnin hypodermically. She had no more than received this strychnin than she became much worse, head drawing back, eyes walling, jerking of muscles, soon she went down and assumed the characteristic pose of a typical case of milk fever and was in a state of complete coma, snoring.

I at once realized that I had made a mistake in my diagnosis and had given her the wrong thing in the strychnin. I then gave her one-half grain atropin sulphate hypodermically, 50cc glucose and inflated her udder. She responded to this treatment and this was at ten o'clock in the morning. She got up at 2:00 P. M. and appeared perfectly normal from then on, this being two months ago. There has been no recurrence up to now.

Another case was a Jersey cow, five years old, with all of the symptoms heretofore enumerated, ten days after calving. I gave her the glucose and inflated

her udder. She appeared normal and was for two days. When I was called back again she appeared exactly like she did at the first visit. I gave the glucose and she would appear normal for another forty-eight hours and she would throw another fit. We kept battling this way for two weeks and finally the owner drenched her with oil and I suppose got some down her lungs for she took pneumonia and died.

I have had owners call me thinking their cows had rabies that were affected with this trouble.

My deductions are: This is a trouble coming from lack of vital element, a nutritive eclampsia. It is closely related to milk fever; half of the cases will have a relapse within two weeks; some every two days for several times; most cases will recover if treated properly; purgatives are harmful; strychnin is positively poisonous to them. Glucose and inflation of the udder, followed with bitter tonics (without nux) combined with potassium iodid is the best treatment. Feed a ration rich in calcium, sugar, phosphates and vitamins and a liberal allowance of it.

Retained placenta is not connected with this trouble in the least. Sedatives such as bromides or cannabis seem to help.

I do not know what the mortality would be untreated, but have heard of several deaths in cows in which the symptoms as described to me were such as to make me believe it was the same trouble.

I believe that a retained placenta would retard this trouble as it seems to in milk fever, in other words the cases occur where everything has gone off O. K. and there is nothing wrong that one can see except the goofeyness.

There is always a subnormal temperature when this trouble occurs the same as in milk fever, even if it is six months away from calving.

Lewisburg, Tenn. R. H. Smith.

SUBMAXILLARY CYST IN A DOG

The cyst shrown in the accompanying illustration occurred in a male, five-year-old, black cocker spaniel. A submaxillary cyst is an abnormal bladder-like sack containing a semi-solid material, and is located below the mandibles. The semi-solid material is secreted by the lining membrane of the cyst. The cyst may be due to the dilation of an obstructed duct, but is more often the result of degeneration of or the obstruction of the outlet of a mucous gland.

A diagnosis of the cyst was made by eliminating the chief distinguishing features

Submaxillary cyst.

of an abscess. The swelling was cold and painless, and developed slowly. The cyst also had sharply defined limits. To confirm the diagnosis an exploratory puncture was made with a small caliber needle, and a gelatinous-like fluid was found. This cyst had been forming for a period of about two years.

Surgical removal of the submaxillary cyst was conducted in the following manner: The pendulous portion of the cyst was shaved and the skin was painted with a solution of mercurochrome. The area was then infiltrated with a local anesthetic. Then an

eliptical incision was made through the skin. The cyst was then completely removed by blunt dissection; the endeavor being made to remove it in its entirety without evacuating the contents. An eliptical portion of the skin was removed and the edges of the wound were sutured with interrupted sutures. The sutures were removed in ten days.

The daily treatment consisted of cleansing the external wound with a solution of flavine (1 to 4800) and at two- to four-day intervals the cavity was treated with tincture of iodin. This treatment was continued for two weeks, at which time it was swabbed with a solution of straight formalin for several times. Following this treatment rapid recovery was made. During the period of treatment the patient showed no symptoms of a depraved appetite nor did he have an elevated temperature. The occurrence of this condition is not very frequent.

Manhattan, Kan. C. J. Price.
K. S. C., '31.

A SHORT STORY ABOUT HOG CHOLERA

About 35 years ago when the writer was a lad, every summer along about June, my father would turn his hogs into the big clover field on the river where they would have free access to the river water. Not long after they were put over there, usually about two weeks, the report would come "Dead hogs in the river field." This meant that several of us boys would be assigned to bury hogs instead of working in the corn field as usual. We would go under the river bank where it was cool and shady and the soil was sandy, and easy to dig. There we would dig deep graves and then we would take sea grass strings and proceed to drag the big fellows and roll them into the grave. It often took several boys to drag one hog, and our instructions were to bury strings with the hog, which we did.

We would bury four or five big hogs a day for a few days. Then somebody would suggest that possibly they had the cholera, and we would take what hogs there were left back to the foothills and no more would die. This process of taking the hogs to the river field and having a lot of them die each time was repeated for about three years, and then it occurred to my father not to take them over there any more. Accordingly, they were never taken back to the river field; but have been kept at the foothills continuously, on the same farm, ever since and none have died, although there have been several outbreaks of cholera in the near vicinity.

I well remember one incident that occurred during one of the three years above referred to that possibly will be of interest to all those interested in symptoms of disease.

One hot morning my father and I were returning from burying hogs, with our shovels on our shoulders. There was a big black hog walking along the path in front of us. Suddenly he stopped, his hair raised up on end and he became perfectly stiff and fell over dead, all in the space of a few seconds. His demise was much quicker than would have been the case had he been shot with an ordinary .22 rifle. My father set his shovel down and said: "Well, son, we will have to dig another grave before we go home even if it is nearly dinner time. . . ."

There was rather a serious outbreak of hog cholera just across the river in 1919. The source of this, however, was traced to the feeding of city garbage, at least to the satisfaction of the writer.

I would like to have the opinion of some authority on hog cholera as to whether or not it was cholera that killed our hogs when I was a boy, and if so, was either the clover field or the river to blame for the infection. For the benefit of those that hold to the infected soil theory, I will say that it was not always the same clover field.

Rembrandt Morgan.

Winfield, W. Va.

Fracture of the Radius in the Horse

By GRANVILLE J. MIARS, Columbus, Ohio
O. S. U., '31

ACCORDING to statistics given by the Prussian army, fracture of the radius in the horse is relatively uncommon as compared with fracture of the other bones of the extremities.

The prognosis is usually regarded as quite unfavorable. In fully mature horses, complete fractures of the radius are generally regarded as incurable.

The following report is of two cases of fracture of the radius, one in a twenty-year-old horse, and the other in a six-months-old colt.

I. May 17, 1930, the twenty-year-old horse shown in the accompanying photograph, came to the hospital with the history of having stepped in a hole with the right fore leg while being used for a military training class.

Fracture of right radius in an Army horse. The animal was kept in a sling and the leg in a cast for five weeks. Photograph was taken nine weeks after the injury.

The symptoms shown were: Unable to bear any weight on the limb, considerable edema of the limb between the elbow and carpus, some abnormal movement, and some crepitation could be detected in spite of the swelling present. Temperature 100.0° F.

A diagnosis of complete fracture of the radius was made.

The leg was put in a cast and the horse put in slings. The infra-red ray lamp was used for several days, after which time the swelling had receded and the cast was changed. On June 6, the horse was taken out of the sling and the cast removed revealing a well formed callus, and was sent home July 1, in an apparently serviceable condition.

The time of healing in this case was about five weeks which is out of the ordinary considering the age.

In October, 1930, this animal was purchased to be used in an operative practice class. The bone was recovered and macerated. The illustration shows the condition of the healed bone. It was a complete, oblique fracture, and at this time complete ossification of the callus had taken place.

II. This pure-bred Belgian colt is owned by the Michigan State College and was entered at the Ohio State Fair. On August 28, 1930, while his dam was being shown, he reared and got his right fore leg through the bars, fracturing the right radius about three inches above the carpus. On arrival at the hospital the diagnosis was made and the limb was placed in a plaster of paris cast stiffened with yucca board. Considerable swelling had taken place which was believed to be a hematoma due to injury of the tissue by the fractured ends.

On September 18, 1930 (22 days) the cast was removed. Considerable enlargement of

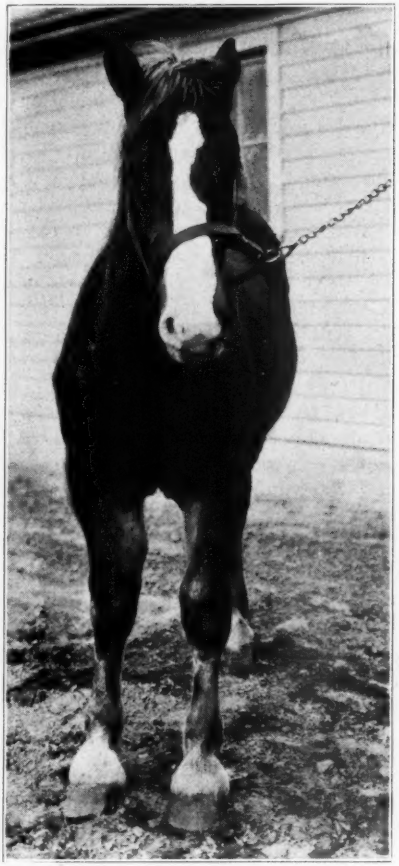
the part was present due to the callus and organization of the hematoma.

All symptoms of radial paralysis were present; extension of the elbow joint, volar flexion of the carpus and interphalangeal articulations, inability to extend the limb, and the limb appearing to be several inches longer than the sound member.

Iodine liniment massages of about twenty minutes each, were given daily.

The colt was sent home October 10, with considerable reduction of the exostosis and some manifestations of being able to extend the limb, becoming more apparent daily.

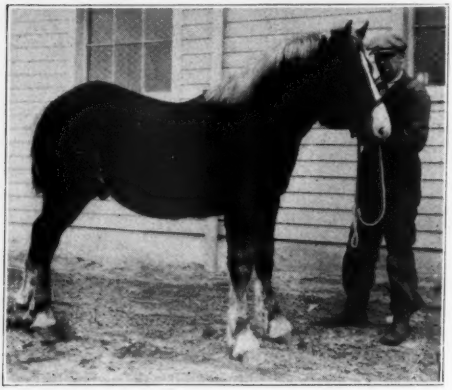
At our request the accompanying photo-



Complete fracture of the right radius about three inches above the carpus. Photo was taken six months after the injury.

graphs and the following letter were received from Mr. Hudson, superintendent of the Michigan State College farm, March 10, 1931.

"The colt is doing well, and except for a small enlargement on the leg he is getting



Fracture of the Radius six months after the injury.

back to normal very fast. He can run as fast as any horse, and except for a little unnatural carriage of the limb at the trot it cannot be said he is particularly handicapped. He gives this one leg somewhat of an inward swing, although not enough to interfere at all with the other leg.

"I am so well pleased with the recovery of this colt that I am glad to have others know all about it."

LIFE HISTORIES OF SIX PARASITES OF BIRDS REVEALED

The life histories of six poultry parasites, nematodes of the superfamily Spiruroidea, have been demonstrated for the first time in this country by Dr. Eloise B. Cram, zoologist of the Bureau of Animal Industry, U. S. Department of Agriculture, and are described in Technical Bulletin 227-T, just issued by that department. The bulletin, which is intended especially for zoologists and veterinarians, explains that these nematodes were found to exist in seven intermediate hosts which were heretofore unknown as hosts. These discoveries double the number of life histories known throughout the world for similar nematodes which are important parasites of poultry and game birds.

A SEVERE OUTBREAK OF ACTINOBACILLOSIS

The feeding-stock on a large farm consisting of about 160 calves, heifers and steers ranging from 5 months up to two years of age had been brought in from pasture and stabled for fattening purposes. A fortnight later, all the young animals between five and 10 months of age developed a chronic, strong, loud and prolonged cough. Individual examination of about twenty head revealed normal temperatures, good appetite, and first-class physical condition. In fact, apart from the cough no pathological symptoms whatsoever were present. A microscopical examination of pharynx secretions did not show strongylus ova or embryos, nor could mature worms be discovered. Since very musty hay and moldy and damp oats-green feed had been fed, a diagnosis of enzootic laryngeal and bronchial catarrh of mycotic origin was given. After three weeks the same cough developed among the one and two-year-old steers kept in different stables, and in addition there were tumor-like swellings from one to four inches in diameter in skin, subcutaneous tissue and lymphatic glands of the pharyngeal region, single or manifold. Maxillary as well as mandibulary enlargements were, and remained, constantly absent during the course of the disease. Later on, the enlargements broke or were incised, and discharged a thick, white pus. Microscopic slides were prepared at my office and *Streptothrix actinomyces* was diagnosed by myself—erroneously, although probably pardonably. Shortly afterwards an exact laboratory diagnosis by an expert was made of *Actinobacillus Lignièresi* was established which, however, did not effect the course of treatment adopted nor alter its final issue.

Potassium iodid in two, later on in three dram doses was given in the drinking water until symptoms of iodism appeared. Twenty-one of the 94 steers did not seem to respond to the treatment at all, the infection having become generalized, affecting lungs, liver,

omentum and the corresponding lymphatic glands as revealed by post mortem examination. The remaining 73 steers are making a good, and by all appearance complete, recovery. It seems remarkable that, with the exception of one only, none of the younger animals which started with the cough developed any enlargements whatsoever, whilst the one and two-year-old steers became 100% affected. The general physical condition of the majority of animals was little impaired during the disease.

In the meantime, actinobacillosis has also developed in milk-cows on about a dozen neighboring farms. The results from potassium iodid treatment which is usually commenced in "statu nascendi" of the disease have been good.

Is it possible that the extremely mild and dry winter in this part of the Province of Alberta has favored the growth of *Actinobacillus Lignièresi* and that hay and green feed have been a suitable medium for its primarily probably metatrophic development?

C. H. Grunert.

Ft. Saskatchewan, Alberta.

THE OCCURRENCE OF MONSTERS IN DAIRY CATTLE

Why should dairy cattle lead all other groups of domestic animals in the production of monsters? Dairy cattle excel all other domestic animals in the volume and virulence of genital disease. In the temperate zone they must be housed and denied adequate exercise much of the year; they are largely fed upon artificially preserved and often damaged foods; following parturition they are commonly rebred at the first or second estrum while the genital organs are yet in a state of fatigue; and if they conceive they are asked to yield an economically profitable flow of milk during seven to eight months of the following gestation, thus bearing a double sexual load.

Far excelling all these burdens combined, and from which the young of beef cattle are comparatively free, is the deficient care of dairy calves. Taken from its dam immediately, or very soon after its birth, the dairy calf is fed artificially, frequently upon milk substitutes, generally upon milk of inferior quality and at unnatural temperature and intervals. Dairy calves are the most unhealthy young domestic mammals. The mortality is appalling. Almost all that survive suffer from disease in the form of diarrhea, pneumonia and arthritis and, escaping these, have chronic indigestion, rough, lustreless hair, pot-bellies and other proof of deficient nutrition, with low vitality. This drags along for five or six months, at which age the heifer commonly ovulates and the bull develops spermatozoa, so that throughout this most critical era during which the genital organs are undergoing their final development, and the reproductive powers are being fixed for life, the young animal is chained to disease. Whether infections which invade the genital organs of the diseased calf persist in its body up to the time of breeding, or whether the ill health during sexual development has so weakened the reproductive system as to wreck its power of resistance to disease, is immaterial. It is folly to expect a reproductive system developed under such handicaps to function ideally later. The brief respite of nine to twelve months allowed the dairy heifer after the close of this period of ill health can not eliminate basic defects in sexual development. The dairyman's faith, seconded by current veterinary opinion, is, that if a heifer lives to breeding age, and is surrounded by a bacteriological dyke, she will reproduce physiologically even though her genital system was dwarfed and wrecked in building. So the dairyman and his veterinarian are astonished when an immature heifer, with a deplorably weak and defective reproductive system, in attempting to produce a calf, omits a kidney or the tail or fails to close one end of the neural canal.—

W. L. Williams in *The Cornell Veterinarian.*

Rabies in Illlinois*

CONTROL of rabies in Illinois is vested in the Department of Agriculture. The attorney general has ruled that neither city, county nor township governing bodies have authority to require the vaccination of dogs for the prevention of rabies or to prescribe quarantine for dogs, but a city council may legally govern the running at large of all animals and require a license fee and charge therefore.

The Department of Agriculture may quarantine an area and police officers therein must enforce the quarantine, kill all unlicensed and unvaccinated dogs found at large.

Quarantines against rabies are opposed by many. State's attorneys and police officers often give poor cooperation or none at all in the enforcement of quarantines. The killing of stray dogs is, of course, a part of the quarantine, and I might say here that shooting the animals in the street is a poor way to destroy them. If they can be caught (they usually can be) I advise placing them in a goods box in which a hole has been bored and a gas pipe fitted in it. With a short hose attached, an automobile can be backed near the box and by means of the short hose, the gas pipe passing into the box can be connected with the exhaust pipe. By running the automobile the animal is quickly, quietly and humanely destroyed.

Many intelligent people still think that rabies is a hot weather disease and in some way caused by hot weather or a lack of water. Many physicians lack information concerning the disease. A stray dog has no more right to live than the wolves of pioneer days.

A county is the smallest unit to which a quarantine should ordinarily be applied. The rabid animal travels far and fast, and unless the quarantine area is of considerable size the quarantine is likely to be wholly ineffective in preventing the spread of the disease.

*Notes from an address by R. E. Nesbitt, State Department of Agriculture, Springfield, Ill., at the Twelfth Annual Illinois Veterinary Conference, University of Illinois, Urbana, Feb. 10-12, 1931.

In this state when a quarantine is placed on any county, the county clerk is furnished a copy of the quarantine proclamation and is required to print a supply for distribution. The supervisors are called together if possible and told their duties in the matter. A notice of the quarantine must be brought to the attention of the dog owners. This is sometimes attempted by publication in the papers and nailing up copies of the quarantine proclamation in public places. Perhaps a still better plan is mailing a copy of the quarantine proclamation to all tax payers in the county.

The quarantine commonly requires that all dogs in the quarantined area must be confined or vaccinated. And confined means actually kept up and under control. A farmer cannot lawfully permit his dog to roam over his farm in a quarantined area.

The quarantine proclamation is read to the city council, and the chief of police and their duties in the matter explained to them. Sometimes the matter is explained also to the school children. It is quite customary for the county supervisors or county commissioner, where a commission form of government is maintained, to employ someone to give his whole time to the enforcement of the quarantine.

A single dose of prophylactic rabies vaccine is recognized by the Illinois Department of Agriculture and vaccinated animals are not subject to quarantine regulations. A certificate of inspection made by an assistant state veterinarian is required for moving dogs out of the quarantined area. Kennel men often oppose this.

In Illinois compensation is provided by law for the loss of live stock due directly or indirectly to dogs. Loss of live stock from rabies comes within this provision and can be recovered from the state. It has been ruled that loss of live stock from rabies even when the live stock was not bitten by a dog is recoverable on the theory that a dog is generally responsible for rabies and rabies would not exist except for this animal.

A considerable number of people die from

rabies in this state. In the past eleven years 65 persons are known to have died from this cause. In one twelve-month period there were 19 deaths in the city of Chicago from rabies. The State Department of Health provides free treatment for indigents but requires that a blank giving full information on the subject be made out by the physician giving the treatment, and be signed by the physician, the indigent, and one other person. More than 500 free treatments yearly are supplied by the State Department of Health on this basis. The City of Chicago, likewise provides free treatment for its citizens unable to pay for it. No record is kept of the number of treatments given in the state for which the patients pay. At the present time 12 counties in the state are quarantined for rabies.

Persons bitten by rabid dogs are usually advised to have the wound cauterized. Certainly no methods of cauterizing other than the use of fuming nitric acid or a hot iron is of any value, and both of these methods leave unsightly scars. Persons so scarred may at a later date sue the physician that cauterized the wound for damages, and I think, recover from him.

It is well to beware of stray dogs. Instances without number are known where picking up stray dogs has led to disaster. I think of a young man in Lee County who on his return from a dance last summer, picked up a nice little dog and took it home with him. The next morning the dog bit the young man's father and the hired man on the place and some of the live stock. As a result, one horse and two cows were lost and all three men took the rabies treatment, the father and the hired man because they had been bitten, and the young man because he had fondled the dog. It had licked his hands.

American bison in a city park.

If the rabies treatment cost only $50.00 a piece, together with the horse and cows, it amounted to considerable loss for picking up a stray dog.

Veterinarians should continue to insist that dogs that bite persons be not killed immediately, but be held under observation for a few days. If the animal is rabid it can be expected to die within three to five days. They must in no case attempt to substitute laboratory diagnosis in this disease for clinical diagnosis. Laboratory diagnosis when positive is confirmatory of clinical diagnosis. When negative it of course cannot be relied upon because the examination may have been made before the negri bodies were formed, or the negri bodies may have been present, but not found.

STREPTOCOCCUS EPIDEMICUS INFECTION IN THE COW AND ITS RELATION TO MILK-BORNE INFECTIONS IN MAN*

WITHIN the last few years a disease has been recognized that is communicable from man to cow and back again to man. The cause of the disease is the *Streptococcus epidemicus*. In man it produces sore throat, in the cow usually mastitis. Formerly, it was thought a wound in the teat was necessary to convey the disease to the cow, but recently it has been proved that such is not necessary and that this streptococcus may invade the udder through the teat canal.

There are no pathogonomonic symptoms of this disease in the cow. The symptoms are just the usual symptoms of acute mastitis. The period of incubation in experimentally infected animals is very short, less than 48 hours.

To diagnose streptococcus epidemicus infection in the cow, we found physical examination insufficient. It is helpful, as is the black cloth test, and the brom-cresol-purple test. However, bacteriological and cultural

*Notes from an address by F. B. Hadley, Professor of Veterinary Science, University of Wisconsin, Madison, at the Twelfth Annual Illinois Veterinary Conference, University of Illinois, Urbana, Feb. 10-12, 1931.

methods are necessary. The organism causes lysis or a solution of blood corpuscles and it grows in a characteristic way on blood agar. The organisms have a marked capsule thus differing from other strains of streptococcus and the strains from people and cows appear to be identical, and lead us to believe that the disease is the same in cows and man.

The disease in man and cows has a single etiological factor, the streptococcus epidemicus. This organism occurs rather frequently in cows. It was diagnosed in 29 cows in 10 herds in about two years. The milk supply of only two of these cows was associated with epidemicus or streptococcic sore throat in man and only one of these cows was associated with a human carrier of the organism.

Investigations have shown that there are more cows harboring these organisms than we have ever realized and more carriers both in man and cow than we had any idea occurred. Possibly many of the carriers harbor organisms of low virulance.

The disposition of the infected cow is a problem for the dairyman. She must be immediately removed from the milk line. Perhaps it is best to beef her. Keeping her in quarantine is hazardous.

Any cow with mastitis following an open wound on the teat should be looked upon with suspicion. That infection is not communicated to man more often is doubtless due to the prevalence of pasteurization, to the fact that the infected milk may be greatly diluted before it reaches the consumer and perhaps also to the fact that organisms from carrier cows may be of low virulance. When an epidemic of streptococcic sore throat occurs as a result of the use of milk from an infected udder, the condition is very serious. Great excitement prevails.

The outbreak in Baraboo, Wisconsin some two years ago illustrates this. There some 250 cases occurred with five deaths, in a period of three or four days. Microscopic examination of throat swabs showed the organisms to be a streptococcus and cultural methods showed it to be the *Streptococcus epidemicus,* and it was traced to a dairy in which a cow had developed a case of mastitis a year before following a teat injury. A second case of mastitis developed in this cow two weeks after calving. It was this attack that was responsible for the epidemic in Baraboo.

In another outbreak, a cow became a hard milker following an injury to the teat. The veterinarian who treated the case left a teat dilator with the owner. It appears that the teat dilator became infected with *Streptococcus epidemicus* organisms from the milker's throat and conveyed them to the cow.

Three cows whose udders were infected with *Streptococcus epidemicus* were bought by the University and taken to the experiment station farm. These cows were infected in only one or two quarters and the infected quarters produced 2%, 0.12% and 8% of the milk of the cows, respectively. That is, infected quarters produced one-twelfth, one-two hundredth and one-third respectively of what they would be expected to produce.

Smears of organisms from the infected quarters were rubbed on the end of the teats of unaffected quarters. They did not infect them, but when rubbed on the ends of the teats of another cow, they caused mastitis.

NAVEL ILL IN A FOAL

The dam of this foal had previously given birth to two foals and on both occasions the foal had died shortly after being born, and in each instance there was evidence of congenital infection. This foal was born on September 9th and it was given a protective inoculation of navel-ill bacterin the same day. It was rather small, unthrifty looking and lacking in vigor. The umbilicus was treated with antiseptics.

On September 11th it seemed rather dull and was stiff in its movements. The temperature was 103° F. A second dose of navel-ill bacterin was given. September 12th, temperature 103.5° F., symptoms more pronounced. About a pint of the dam's blood was drawn from the ju-

gular vein into a sodium citrate solution and 100cc of it administered subcutaneously. September 13th, temperature 104° F., the right carpal joint swollen and very painful, to which an antiphlogistine poultice was applied. 100cc of dam's blood was administered. September 14th, the temperature was 102° F. The foal looked brighter and the lameness was much improved. At this time a swab was taken of the uterine discharge of the dam and a hemolytic streptococcus was found. September 15th, the temperature 104° F. The foal lame in left hind leg, swelling at the fetlock joint. Another 100cc of the dam's blood administered. September 16th, temperature 103.6° F.

The umbilicus was slightly swollen and on removal of the dried-up stump of the cord pus flowed from it. Swabs were taken of the pus and cultures made in which was found a hemolytic streptococcus similar to that obtained from the dam's uterus. The umbilicus was irrigated with hydrogen peroxide solution and finally injected with a 2% mercurochrome solution. 100cc of the dam's blood was given and in addition 20cc of a 1% solution of mercurochrome administered intravenously.

September 17th, the temperature was 103.4° F. Foal lame in the left front leg but no swelling, and the lameness had disappeared from the other two limbs. There was some discharge from the umbilicus which was again treated with mercurochrome. The subcutaneous injection of 100cc of the dam's blood and the intravenous injection 20cc of a 1% mercurochrome solution were repeated. September 18th, temperature 103.6° F., but the foal appeared bright though still quite lame. The dam's blood and mercurochrome solution were again administered. September 19th, temperature 103.6° F. Foal attempted to play in spite of lameness. The discharge from the umbilicus had ceased. September 20th, temperature 103° F. From this date on the temperature gradually dropped to normal. The foal became brighter, would play, and the lameness disappeared.

It is difficult to estimate the value of the various means used to combat the disease in this instance. The writer feels that the navel-ill bacterin was of no value. Certainly it did not prevent the occurrence of the disease and it is not likely that it had any curative effect. Following the first two injections of the dam's blood there appeared to be a curative effect for the temperature went down to 102° F., but the case became acute again and it was not until after the mercurochrome had been administered intravenously that any lasting benefit was obtained. Another significant feature is that recovery did not take place until the dried gangrenous stump of the umbilical cord was removed and the pus permitted to escape. This was coincident with the intravenous injections of mercurochrome. At the Ontario Agricultural College all the foals were given a protective inoculation of a navel-ill bacterin at birth this past season. It is impossible to estimate the value of this procedure for there were no controls, and even if there had been it would be impossible to tell whether they had been infected or not. This much may be said, however, that none of the foals developed the disease after they were two weeks old, which is about the length of time required to produce an artificial immunity. Two of the foals died from septicemia in a day or two after birth. It may be inferred that the bacterin is of no value to prevent early cases, as they occur too soon after birth to admit of an immunity being acquired as a result of the use of bacterin.—Annual Report, Ontario Veterinary College.

A VICTORY FOR SANITATION

In 1890 the death-rate in Chicago from typhoid fever was 91 per 100,000. Last year it was 0.56, a reduction of 99 2/5 per cent. To put it another way, there were 18 deaths in the city from typhoid last year, but had the 1890 rate prevailed there would have been 2,957 deaths from this disease.

EPIDURAL ANESTHESIA

During the 1926 meeting of the American Veterinary Medical Association Professor Franz Benesch of Vienna, Austria, demonstrated a new type of regional anesthesia to the veterinary profession of America. The application of this relatively simple operation has a wide range of usefulness in cattle practice and any practitioner who is not taking advantage of it is missing a splendid means of restraint in conditions associated with continued expulsive efforts or straining. Veterinarians are learning that this form of regional anesthesia has a wider application than was at first thought. Not only is it being used for an increasing number of conditions affecting cows, but the principle has been applied in horses, swine, dogs and cats. The anesthetic is not always injected in the same region but the final effect is much the same.

Procaine is the anesthetic of choice. It should be used in a 1% to 2% solution. The site of the injection in cows is in the first intercoccygeal space, the space between the first and second coccygeal vertebrae at which point the spinal canal is readily pierced. The site of injection can be ascertained readily by palpation of this region. A depression can be felt and if the tail is grasped and moved up and down it will be noticed that motion takes place at this point to a greater extent than it does at any other intercoccygeal space.

A 16-gauge needle from 1½ to 2 inches long may be used. It is plunged into the space and when it reaches the bottom of the spinal canal is slightly withdrawn and the injection made with a 20 or 30cc hypodermic syringe. Care should be taken to shave and sterilize the operative site and to have the solution sterile. The amount of the solution used depends upon the degree of anesthesia required. Ten to 15cc will anesthetize the pelvis. 20cc may put a cow off her hind legs. The indications for its use are to control expulsive efforts in dystocia, in prolapse of the uterus or the vagina or following their replacement, the manual removal of retained afterbirth, etc. The greatest obstacles to the successful accomplishment of removing an afterbirth are expulsive efforts and contraction of the uterus and cervix. Epidural anesthesia relaxes the genital tract, removes sensation and prevents straining so its value under these circumstances can be readily understood. For any surgical or obstetrical operations in the region of the external genitals and perineum its value has been proved. In the male for operation on the penis or scrotum; in fact for any operations back of the diaphragm, in cattle, swine, horses and dogs it is highly recommended by competent surgeons.—Annual Report, Ontario Vet. College.

TREATMENT FOR ENTERITIS IN A BOSTON TERRIER

In the March issue of VETERINARY MEDICINE, page 93, a veterinarian from the District of Columbia describes in an excellent manner a fatal case of enteritis in a Boston terrier. He requests information as to the outcome of a similar case described by myself in the February issue, page 84.

I am in rather an out of the way place where it is not convenient to have X-ray pictures taken and the dog made such a good recovery that I did not deem it necessary.

As for the treatment, complete rest of the patient was insisted upon, and in the beginning it was allowed only cold water into which five grains of hexamethylenamine crystals had been dissolved in sufficient water to last 24 hours.

In addition to the cold water and hexamethylenamine, the dog was given the white of one egg on the second day. The third day a small quantity of beef broth was added, and on the fourth day milk was added and a small quantity of meat scraps was left in the broth.

The animal made a good recovery, but three months later was run over by an automobile and was killed. I held an autopsy, but could discover nothing abnormal to account for the enteritis.

Ewen, Michigan J. H. Wilson.